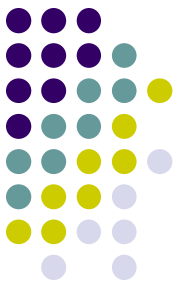


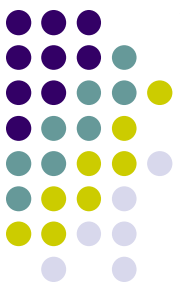
Galactosemia

- Inability to convert galactose to



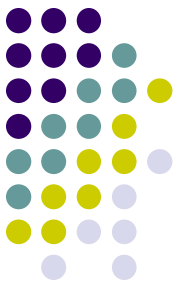
Galactosemia

- Inability to convert galactose to glucose



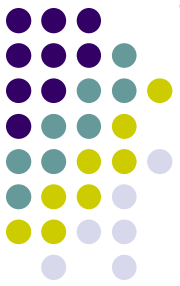
Galactosemia

- Inability to convert galactose to **glucose**
- Inheritance: abb.



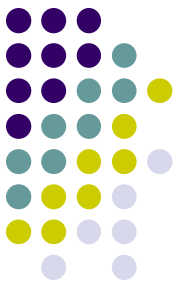
Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR



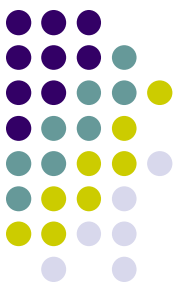
Galactosemia

- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **#** enzymes involved in galactose metabolism

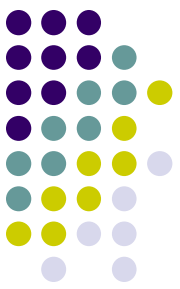


Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism

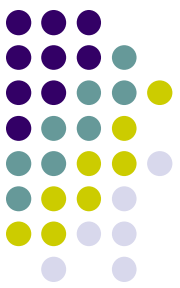


Galactosemia



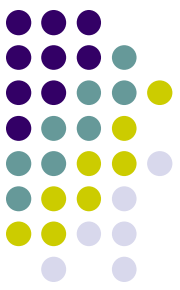
- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - **most vs least** common and **most vs least** severe form

Galactosemia



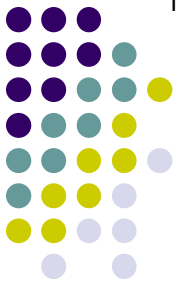
- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - **Most** common and **most** severe form

Galactosemia



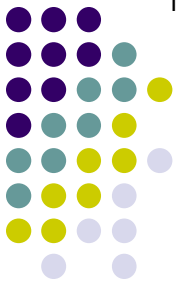
- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - **Most** common and **most** severe form
 - Caused by defect in the **something-something-ase** enzyme

Galactosemia



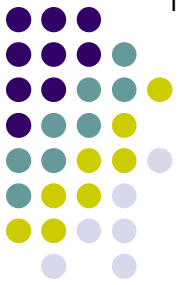
- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - **Most** common and **most** severe form
 - Caused by defect in the **uridylyltransferase** enzyme

Galactosemia



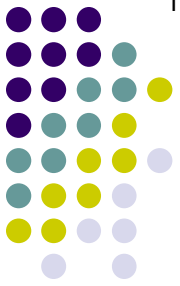
- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - **Most** common and **most** severe form
 - Caused by defect in the **uridylyltransferase** enzyme
 - 75% develop cataracts within **time unit** to **time unit** of birth

Galactosemia



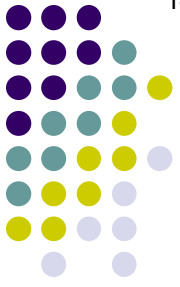
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 - 75% develop cataracts within **days** to **weeks** of birth

Galactosemia



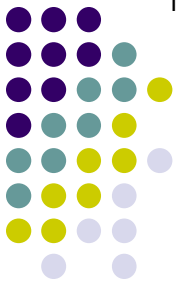
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 - Caused by defect in the **uridyltransferase** enzyme
 - 75% develop cataracts within **days** to **weeks** of birth
 - Starts as **classic two-word description**

Galactosemia



- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - **Most** common and **most** severe form
 - Caused by defect in the **uridytransferase** enzyme
 - 75% develop cataracts within **days** to **weeks** of birth
 - Starts as **'oil droplet'**

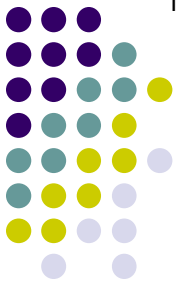
Galactosemia



- Inability to convert galactose to glucose
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- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the uridylyltransferase enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as 'oil droplet'

What simple exam maneuver is the best way to pick up an oil droplet cataract?

Galactosemia



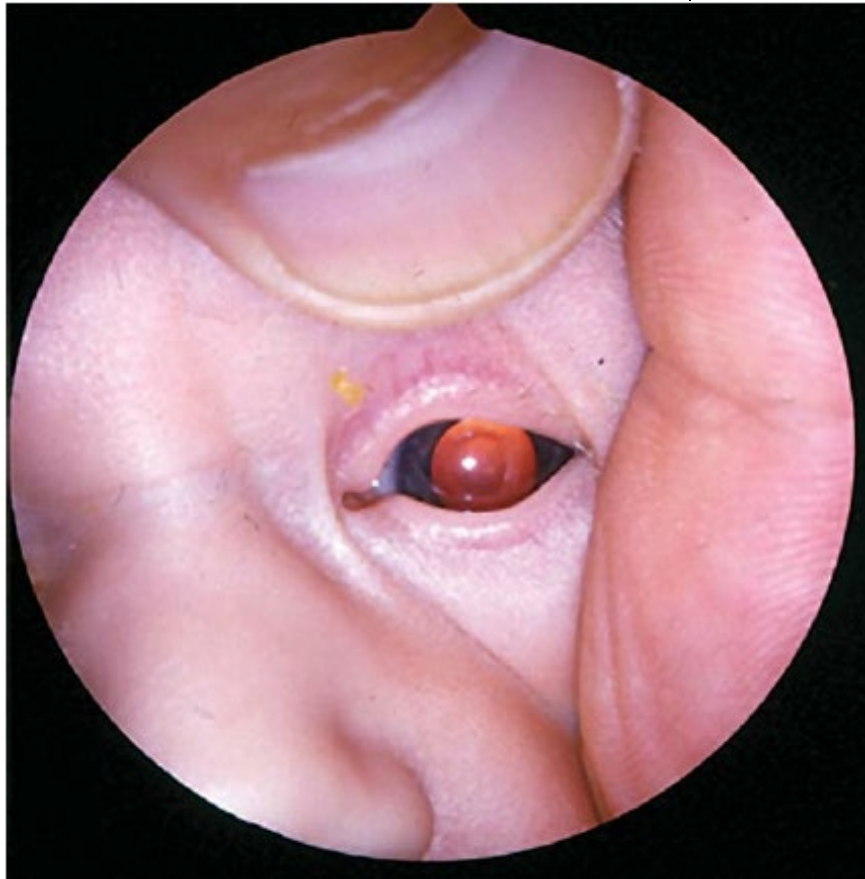
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What simple exam maneuver is the best way to pick up an oil droplet cataract?

Retroillumination

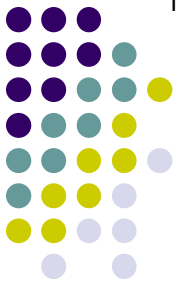


Galactosemia



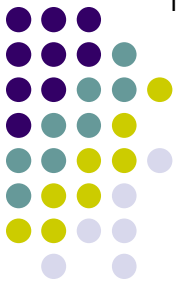
Oil-droplet cataract: Retroillumination

Galactosemia

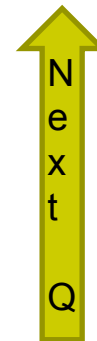


Galactosemia: Oil-droplet cataracts

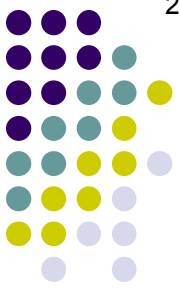
Galactosemia



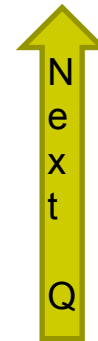
- Inability to convert galactose to **glucose**
- Inheritance: **AR**
- Results from a defect in one of the **three** enzymes involved in galactose metabolism
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 - **Most** common and **most** severe form
 - Caused by defect in the **uridylyltransferase** enzyme
 - 75% develop cataracts within **days** to **weeks** of birth
 - Starts as **'oil droplet'**; progresses to classic two-word description



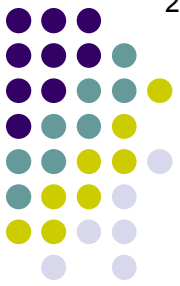
Galactosemia



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- Results from a defect in one of the **three** enzymes involved in galactose metabolism
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 - **Most** common and **most** severe form
 - Caused by defect in the **uridylyltransferase** enzyme
 - 75% develop cataracts within **days** to **weeks** of birth
 - Starts as **'oil droplet'**; progresses to **total opacification**



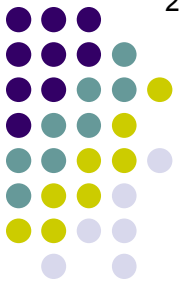
Galactosemia



- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
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 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

When you hear oil droplet cataract, three conditions should come to mind. One is galactosemia; what are the other two? (Note: Both are named for the shape of the lens.)

Galactosemia



- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
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When you hear oil droplet cataract, three conditions should come to mind. One is galactosemia; what are the other two? (Note: Both are named for the shape of the lens.)

Anterior and posterior



Galactosemia

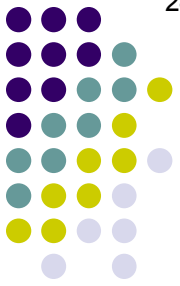


- Inability to convert galactose to glucose
- Inheritance: AR
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 - 75% develop cataracts within days to weeks of birth
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When you hear oil droplet cataract, three conditions should come to mind. One is galactosemia; what are the other two? (Note: Both are named for the shape of the lens.)

Anterior and posterior lenticonus

Galactosemia



- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
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When you hear oil droplet cataract, three conditions should come to mind. One is galactosemia; what are the other two? (Note: Both are named for the shape of the lens.)

Anterior and posterior **lenticonus**

In one (unsurprising) word, what is the shape of the affected lens surface in lenticonus?

Galactosemia



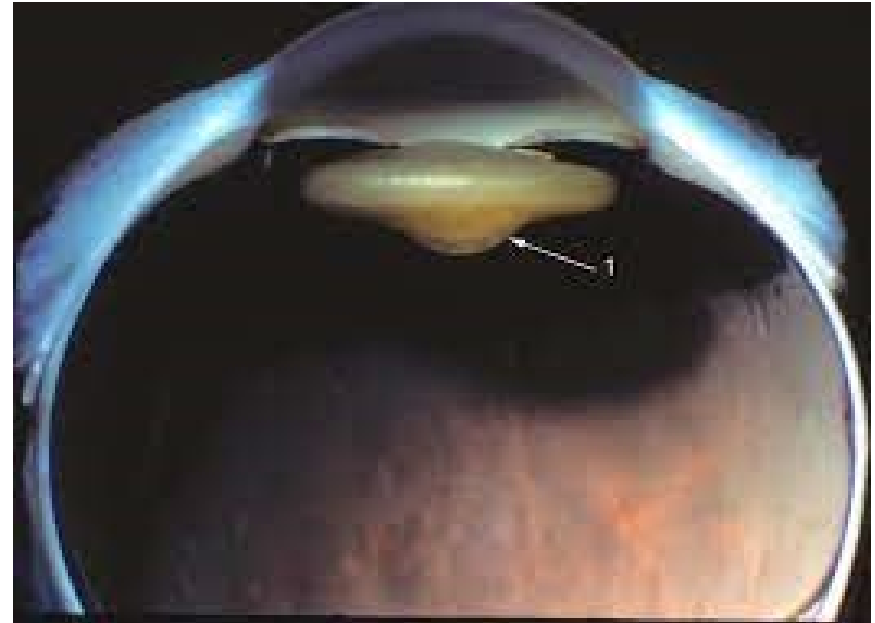
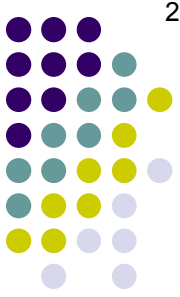
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- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
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Anterior and posterior **lenticonus**

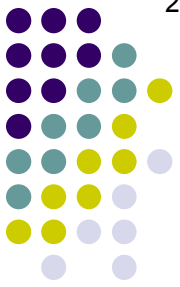
In one (unsurprising) word, what is the shape of the affected lens surface in lenticonus?
 'Conical.'

Galactosemia



The conical shape of a lenticonus lens

Galactosemia

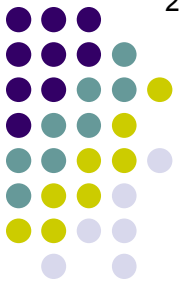


- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
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 - 75% develop cataracts within days to weeks of birth
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When you hear oil droplet cataract, three conditions should come to mind. One is galactosemia; what are the other two? (Note: Both are named for the shape of the lens.)

Anterior and posterior **lenticonus**

In one (unsurprising) word, what is the shape of the affected lens surface in lenticonus? 'Conical.' So, there's a fundamental difference between the cause of the oil-droplet appearance in lenticonus (= increased central lenticular power) vs that of galactosemia (= the accumulation of galactitol and fluid in the central lens).



Galactosemia

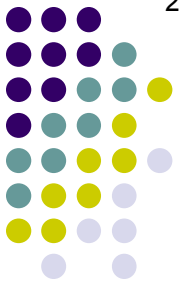
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- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
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 - Most common and most severe form
 - Caused by defect in the uridylyltransferase enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are unilateral vs bilateral and inherited vs sporadic hind. for

(the shape of the lens.)

Anterior and posterior **lenticonus**

Galactosemia



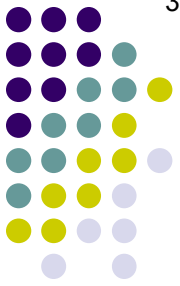
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 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic

hind.
for

(the shape of the lens.)

Anterior and posterior **lenticonus**



Galactosemia

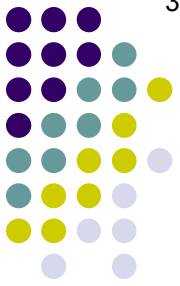
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- Results from a defect in one of the three enzymes involved in galactose metabolism
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 - Caused by defect in the *uridytransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic. When it is unilateral, it is usually

hind.
for

(the shape of the lens.)

Anterior and posterior **lenticonus**



Galactosemia

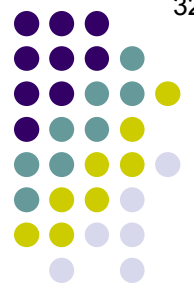
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 - 75% develop cataracts within days to weeks of birth
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Most cases of anterior lenticonus are bilateral and syndromic. When it is unilateral, it is usually sporadic.

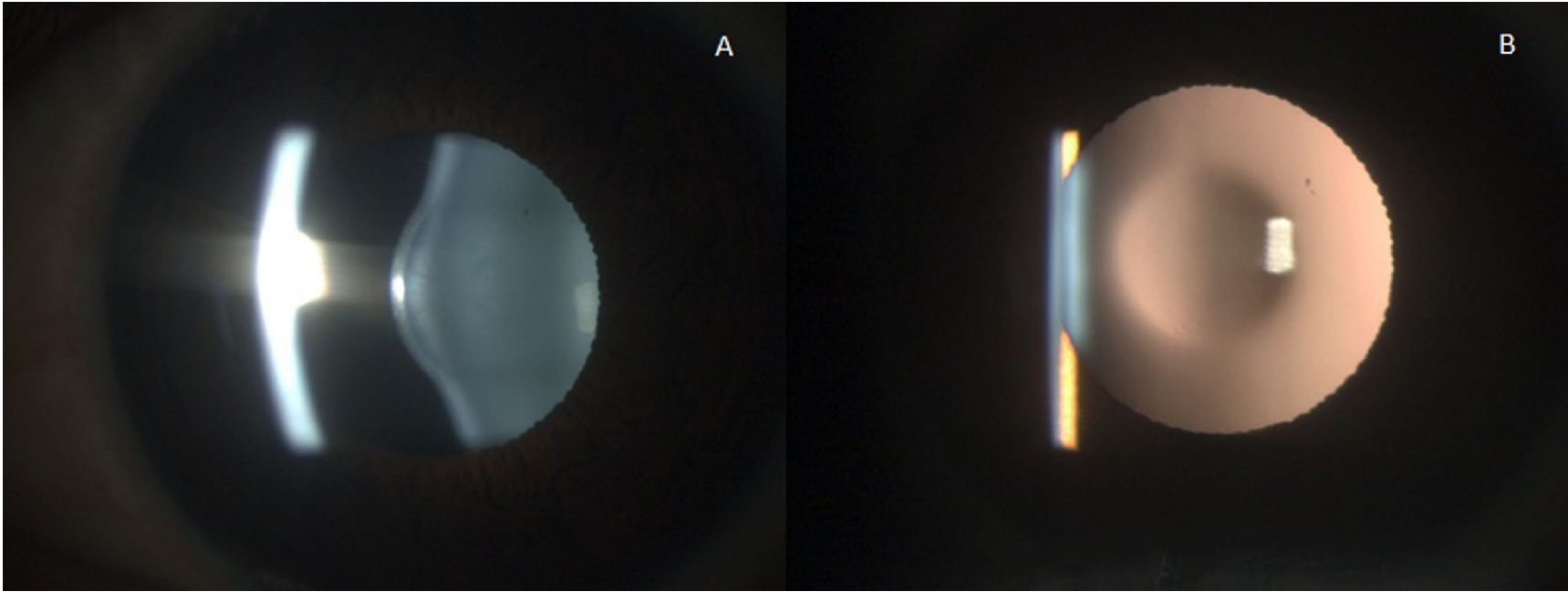
*hind.
for*

(the shape of the lens.)

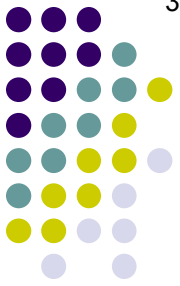
Anterior and posterior lenticonus



Galactosemia



Anterior lenticonus



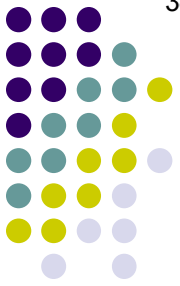
Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the *uridylyltransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic . When it is unilateral, it is usually sporadic . With what syndrome is anterior lenticonus strongly associated?

(the shape of the lens.)

Anterior and posterior lenticonus



Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
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 - Caused by defect in the *uridylyltransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

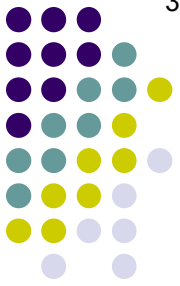
Most cases of anterior lenticonus are bilateral and syndromic . When it is unilateral, it is usually sporadic . With what syndrome is anterior lenticonus strongly associated?

Alport syndrome

(shape of the lens.)

Anterior and posterior **lenticonus**

hind.
for



Galactosemia

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- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
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Alport syndrome

hind.
for

(Anterior and posterior lenticonus)

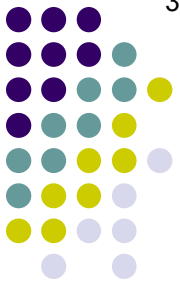
Anterior and **posterior lenticonus**

Most cases of posterior lenticonus are

unilateral vs
bilateral

and

inherited vs
sporadic



Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the *uridylyltransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
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Most cases of anterior lenticonus are bilateral and syndromic. When it is unilateral, it is usually sporadic. With what syndrome is anterior lenticonus strongly associated?

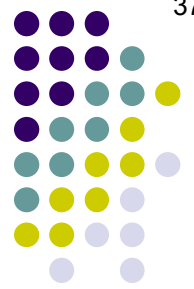
Alport syndrome

hind.
for

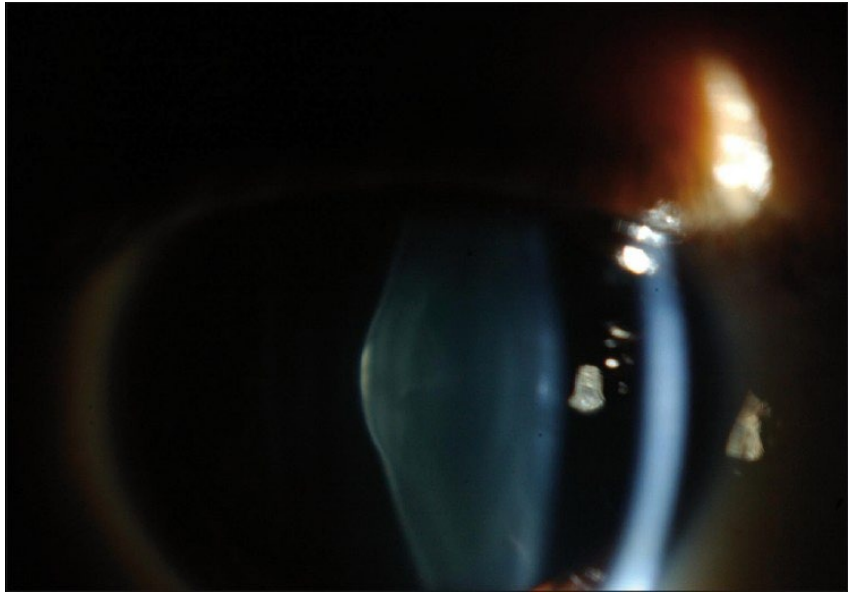
(Anterior and posterior lenticonus)

Anterior and **posterior lenticonus**

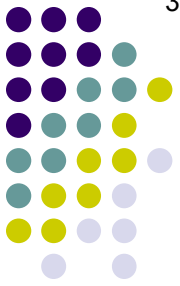
Most cases of posterior lenticonus are unilateral and sporadic.



Galactosemia



Posterior lenticonus



Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the *uridylyltransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic. When it is unilateral, it is usually sporadic. With what syndrome is anterior lenticonus strongly associated?

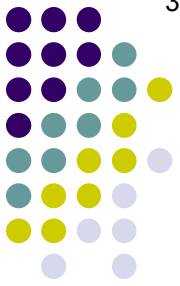
Alport syndrome

hind.
for

(Anterior and posterior lenticonus)

Anterior and posterior lenticonus

Most cases of posterior lenticonus are unilateral and sporadic. When it is bilateral, it is usually



Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the *uridylyltransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic . When it is unilateral, it is usually sporadic . With what syndrome is anterior lenticonus strongly associated?

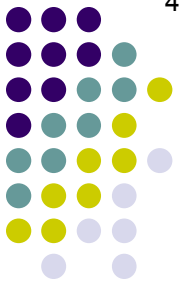
Alport syndrome

hind.
for

(Anterior and posterior lenticonus.)

Anterior and **posterior lenticonus**

Most cases of posterior lenticonus are unilateral and sporadic . When it is bilateral, it is usually syndromic .



Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the *uridylyltransferase* enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic. When it is unilateral, it is usually sporadic. With what syndrome is anterior lenticonus strongly associated?

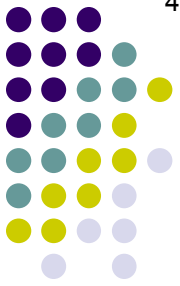
Alport syndrome

hind.
for

(Anterior and posterior lenticonus.)

Anterior and **posterior lenticonus**

Most cases of posterior lenticonus are unilateral and sporadic. When it is bilateral, it is usually syndromic. With what syndrome is posterior lenticonus strongly associated?



Galactosemia

- Inability to convert galactose to glucose
- Inheritance: AR
- Results from a defect in one of the three enzymes involved in galactose metabolism
- *Classic galactosemia*:
 - Most common and most severe form
 - Caused by defect in the uridylyltransferase enzyme
 - 75% develop cataracts within days to weeks of birth
 - Starts as oil droplet progresses to total opacification

Most cases of anterior lenticonus are bilateral and syndromic. When it is unilateral, it is usually sporadic. With what syndrome is anterior lenticonus strongly associated?

Alport syndrome

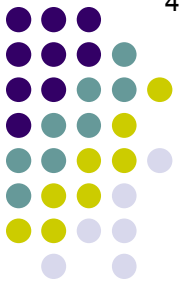
hind.
for

(Anterior and posterior lenticonus.)

Anterior and **posterior lenticonus**

Most cases of posterior lenticonus are unilateral and sporadic. When it is bilateral, it is usually syndromic. With what syndrome is posterior lenticonus strongly associated?

Low syndrome



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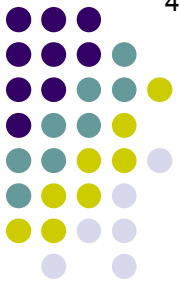
Most cases of anterior
it is usually sporadic

Alport syndrome

Anterior a

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Lowe syndrome



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Familial oculorenal syndromes

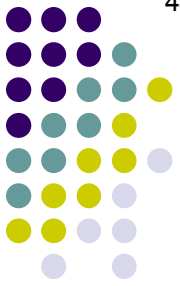
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Familial oculorenal syndromes

How are they inherited?

Alport syndrome

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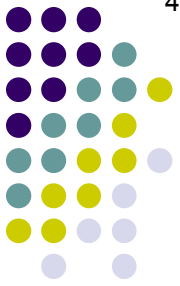
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How are they inherited?
Most are X-linked

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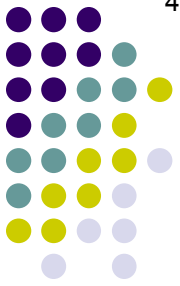
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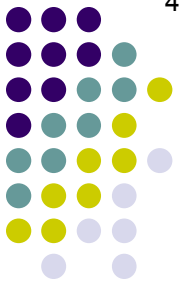
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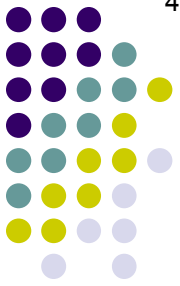
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Of the two relationships (Alport \leftrightarrow anterior lenticonus; Lowe \leftrightarrow posterior lenticonus), which is stronger?

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Lowe \leftrightarrow posterior lenticonus. Anterior lenticonus occurs in Alport syndrome in only about % of cases.

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it is usually sporadic

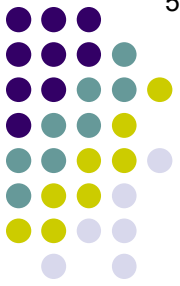
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Of the two relationships (Alport \leftrightarrow anterior lenticonus; Lowe \leftrightarrow posterior lenticonus), which is stronger?

Lowe \leftrightarrow posterior lenticonus. Anterior lenticonus occurs in Alport syndrome in only about 25% of cases.

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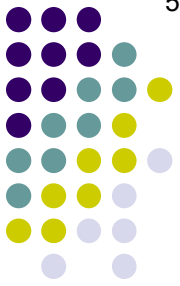
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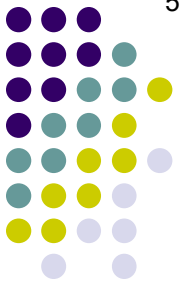
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For more on lenticonus and Alport/Lowe syndromes, see slide-set L4

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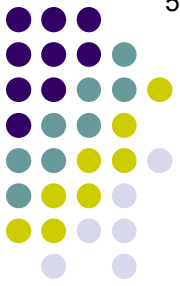
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- **Classic galactosemia:**

What are the **systemic** manifestations of classic galactosemia?

--?

--?

--?

enzyme

weeks of birth

identification

Galactosemia



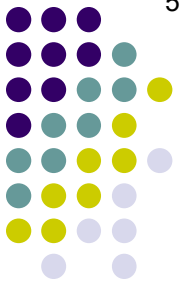
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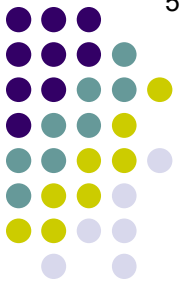
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enzyme
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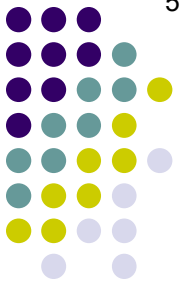
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enzyme
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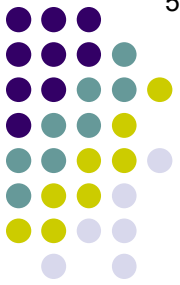
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What is the prognosis if classic galactosemia goes untreated?

It is uniformly fatal

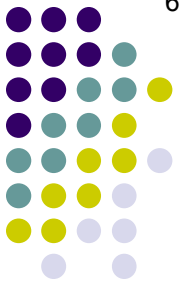
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Galactosemia



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 - To diagnosis classic galactosemia: Check UA for presence of two words, *after* important, often overlooked

Galactosemia



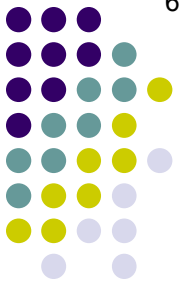
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Galactosemia



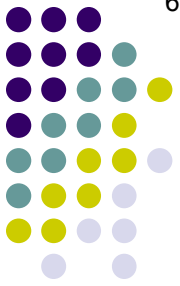
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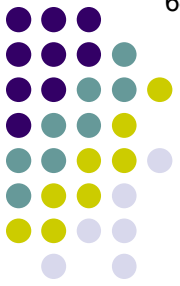
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Will the cataractous changes reverse with treatment?

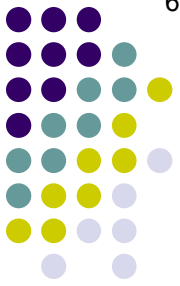
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Will the cataractous changes reverse with treatment?
Yes, if it is started in a timely fashion

Galactosemia



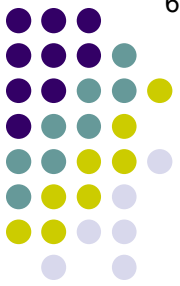
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If they do not reverse with tx, is cataract extraction indicated?

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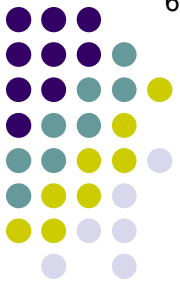
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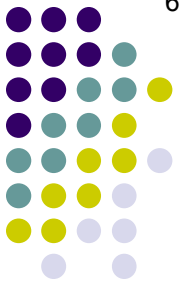
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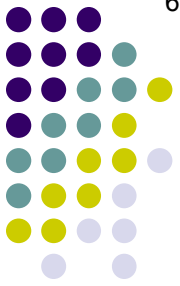
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- In the two *non-classic* forms...
 - Disease **more/less** severe than in classic disease

Galactosemia



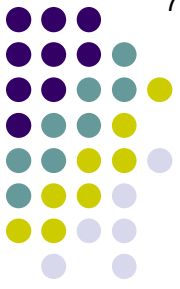
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