

Q

Glands of the Orbit (*but not that one*)



- The meibomian glands are embedded within the specific structure.

A

Glands of the Orbit (*but not that one*)

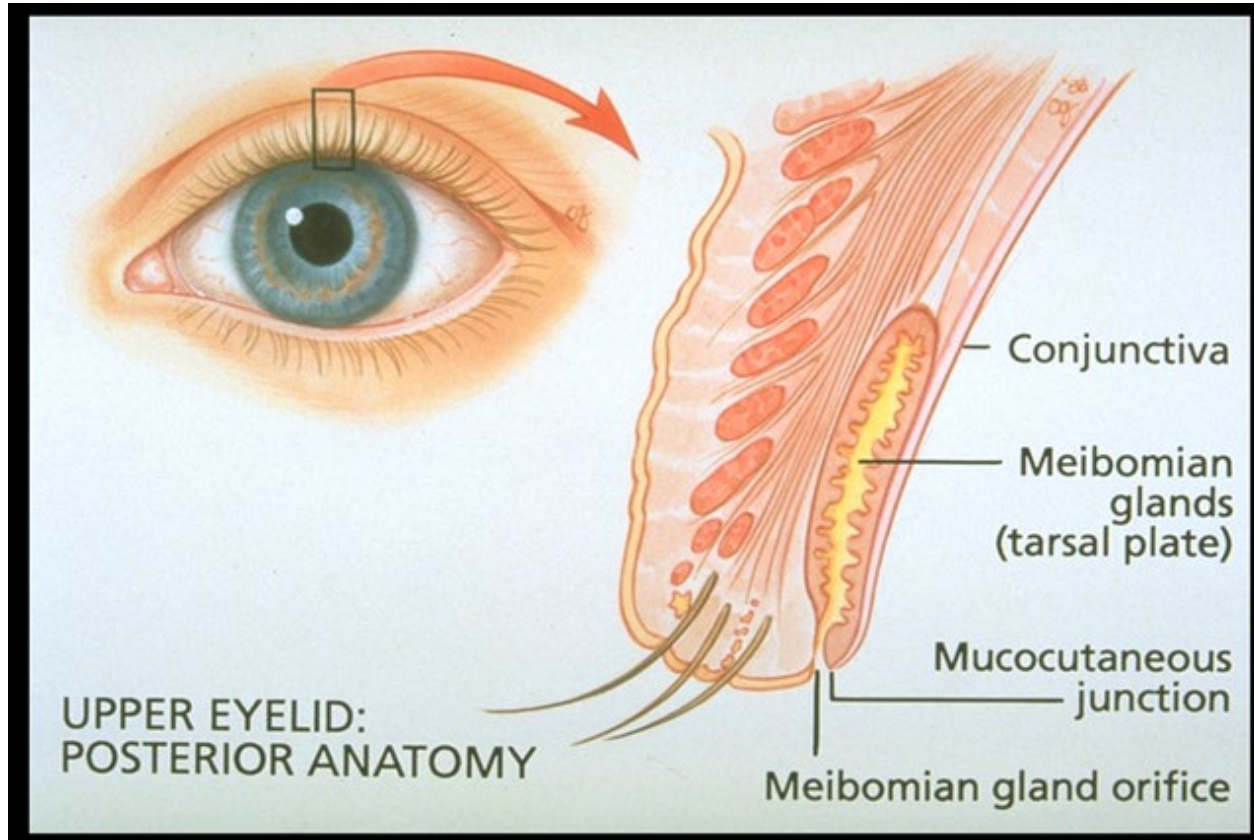


- The meibomian glands are embedded within the tarsal plate.

Glands of the Orbit (*but not that one*)



3



Meibomian glands

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Are meibomian glands innervated? (Efferently that is; obviously they have associated sensory innervation, eg pain, temp.)

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Indeed they are, by fibers of the

sympathetic?
parasympathetic?
somatic?

system

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What role does this innervation play in their function?



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Indeed they are, by fibers of the parasympathetic system

What role does this innervation play in their function?

As of this writing, the role (if any) remains to be determined

Q

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9

- The meibomian glands are embedded within the tarsal plate.
- The product of a meibomian gland is called duh.

A

Glands of the Orbit (*but not that one*)



- The meibomian glands are embedded within the tarsal plate.
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Glands of the Orbit (*but not that one*)



11

- The meibomian glands are embedded within the tarsal plate.
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In one word, what sort of biochemical is meibum?

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A lipid

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The lipids comprising meibum come in two basic flavors—what are they?

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A *nonpolar* version that is

hydrophilic?
hydrophobic?
amphiphilic?

, and a *polar* version that is

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In this context, what does it mean to say a lipid is amphiphilic?

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In this context, what does it mean to say a lipid is amphiphilic?

It means the lipid has one end ('pole') that can interact chemically with water (ie, is hydro**philic**), whereas its other pole can't (ie, is hydro**phobic**)



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The polar/amphiphilic type is an example of what specific subtype of lipid, common to all cellular life forms? (You know this word, promise.)

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Can we infer the physical orientation these two species of meibum will assume in the tear film?

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We can indeed. The amphiphilic phospholipids will be adjacent to the

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Phospholipid

Can we infer the physical orientation these two species of meibum will assume in the tear film?

We can indeed. The amphiphilic phospholipids will be adjacent to the mucoaqueous gel, with their hydrophilic pole oriented toward the gel and their hydrophobic pole oriented away from it. The nonpolar/hydrophobic meibum will be found atop the hydrophobic tails of their polar cousins, as far from the hated water as their hydrophobic selves can get.



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- There are up to twice as many meibomian glands in the lids

upper vs lower

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How many MGs are we talking about for each lid?

--Uppers: ? (looking for a range here)

--Lowers: ? (ditto)



A

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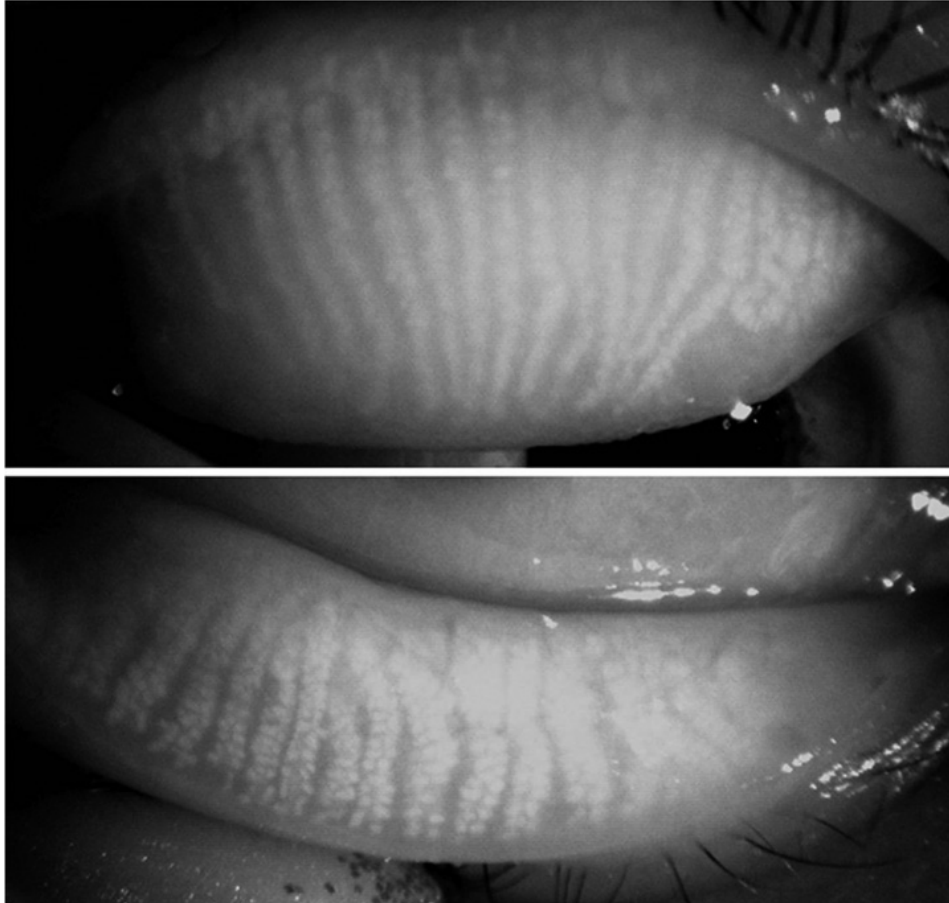
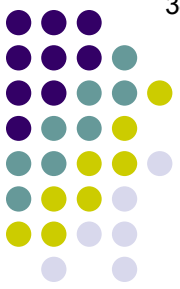
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How many MGs are we talking about for each lid?

--Uppers: 30-40

--Lowers: 20-30

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Meibomian glands: UL and LL



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How does a chalazion present?



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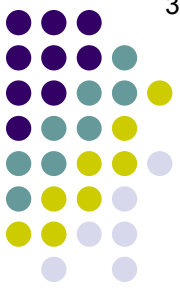
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As focal swelling localizing to the tarsal plate

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Chalazion



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Is it an inflammatory condition?

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What bug is most commonly implicated?



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What bug is most commonly implicated?

None—it is a sterile condition



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But you said it was inflammatory—what's the deal?



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How does a chalazion present?

As focal swelling localizing to the tarsal plate

Is it an inflammatory condition?

It is indeed

What bug is most commonly implicated?

None—it is a sterile condition

But you said it was inflammatory—what's the deal?

Bear in mind, not all inflammatory conditions are infectious in origin



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How does a chalazion present?

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In broad terms, what is the pathophysiology causing chalazia?

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It is indeed

In broad terms, what is the pathophysiology causing chalazia?

Obstruction of a meibomian gland prevents normal meibum expression. The backed-up meibum then leaks or breaks into the surrounding tissue, where it incites the inflammatory reaction.



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Is it an inflammatory condition?

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In broad terms, what is the pathophysiology causing chalazia?

Is the inflammatory reaction granulomatous, or nongranulomatous?

Or expression.
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Granulomatous

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Granulomatous—specifically, a **something-granulomatous** reaction

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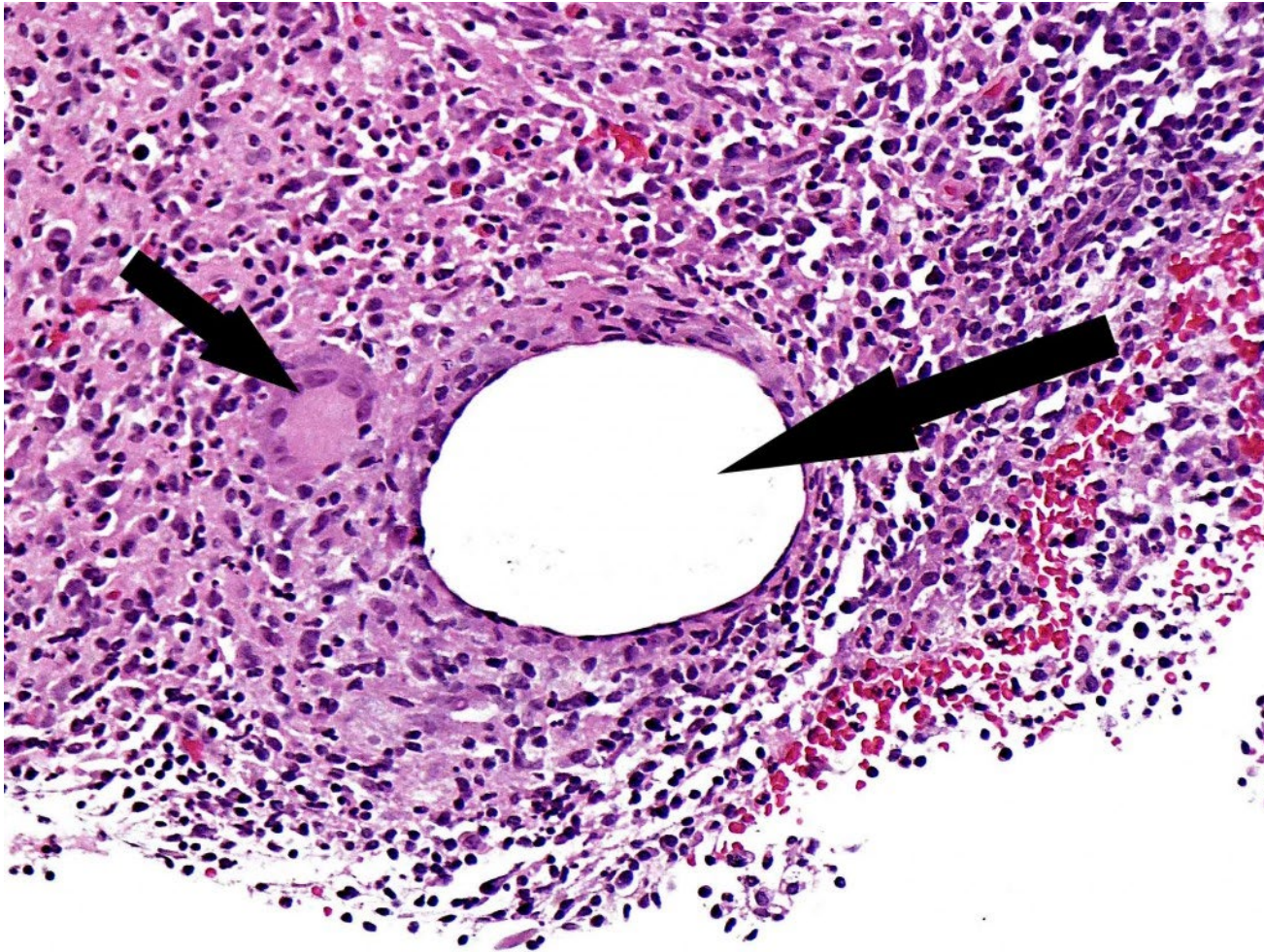
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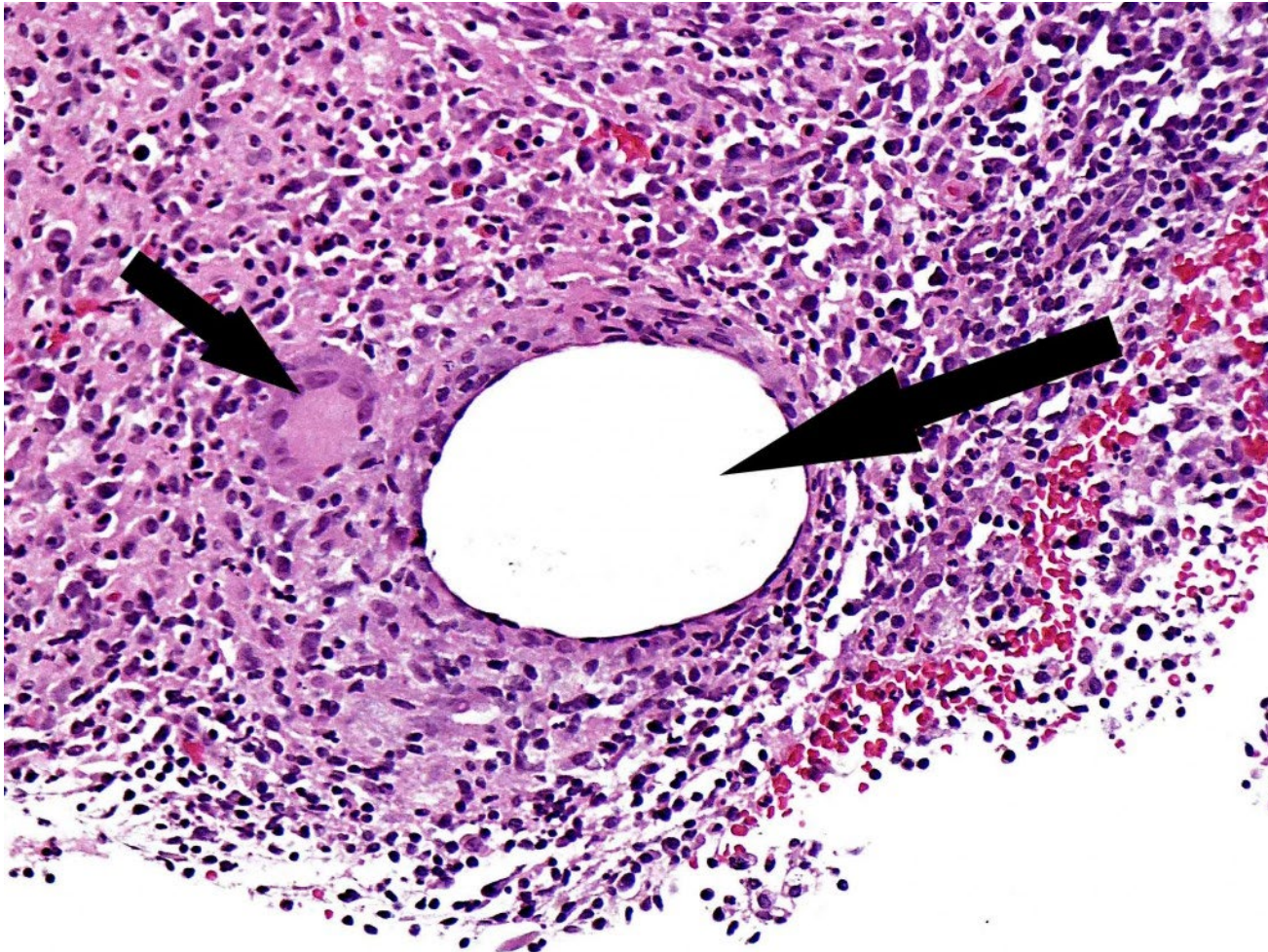
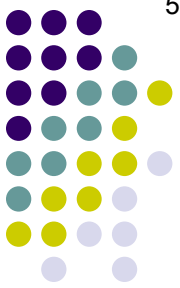
Granulomatous—specifically, a lipogranulomatous reaction

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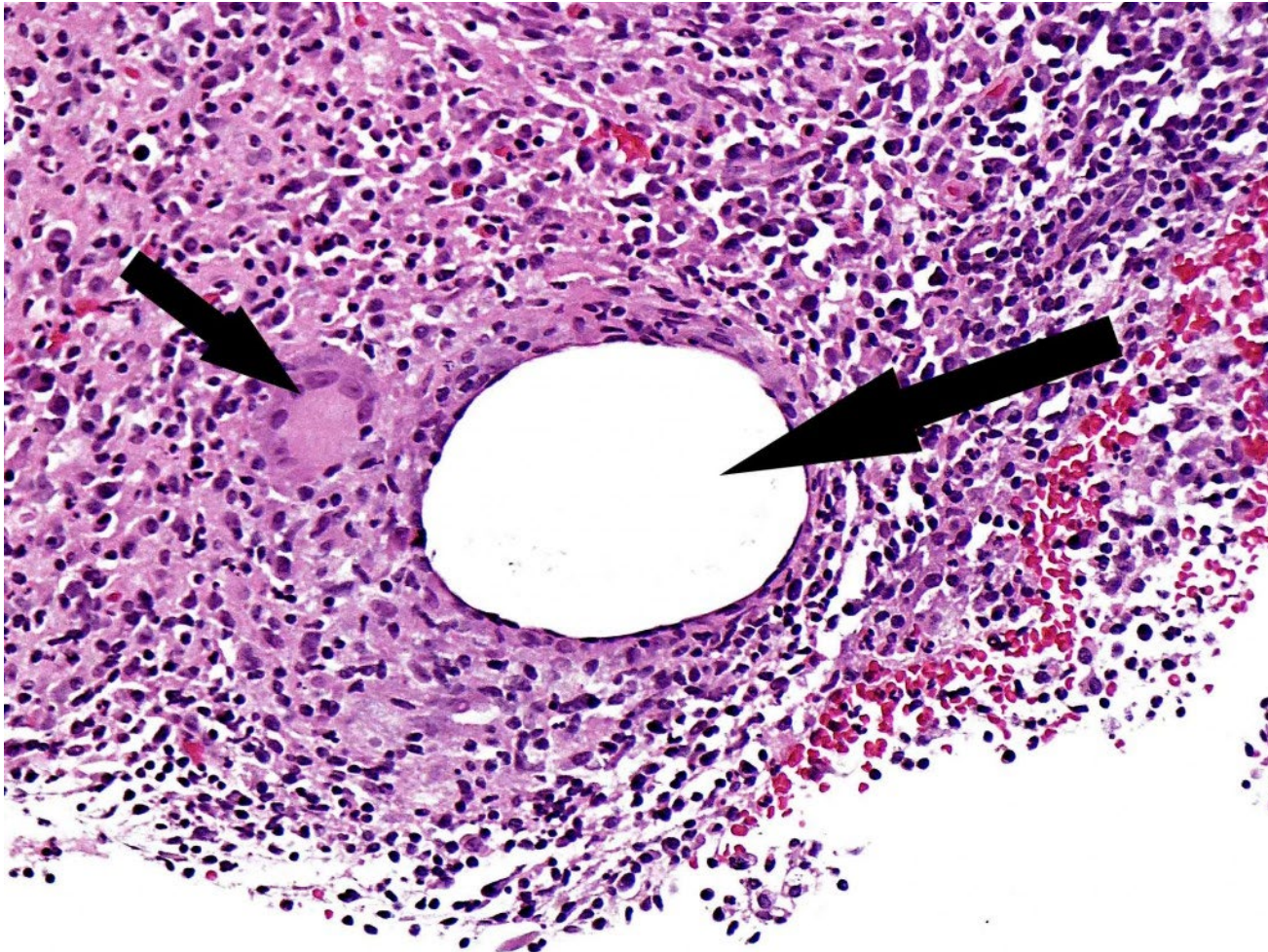
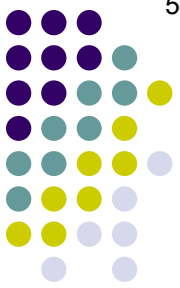
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Chalazion. The empty space (large arrow) is where lipid was located (it got washed out during slide prep).



Chalazion. The empty space (large arrow) is where lipid was located (it got washed out during slide prep).
The smaller arrow is pointing toward a cell, a defining feature of granulomatous inflammation



Chalazion. The empty space (large arrow) is where lipid was located (it got washed out during slide prep).
The smaller arrow is pointing toward a *giant cell*, a defining feature of granulomatous inflammation



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- What are the *glands of Krause and Wolfring*?

- The meibomian glands are embedded within the tarsal plate.
- The product of a meibomian gland is called meibum.
- The product of a sebaceous gland is called sebum.
- How do these differ (other than in their gland of origin)? Meibum has a much lower concentration of polar triglycerides and free fatty acids than does sebum. Also, meibum has a lower melting point (\leq to ocular surface temp).
- There are up to twice as many meibomian glands in the upper lids, which probably accounts for the increased risk of getting chalazia there.
- What are the *glands of Krause and Wolfring*? The so-called

two words

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Q

Glands of the Orbit (*but not that one*)

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- Where are they located? The and



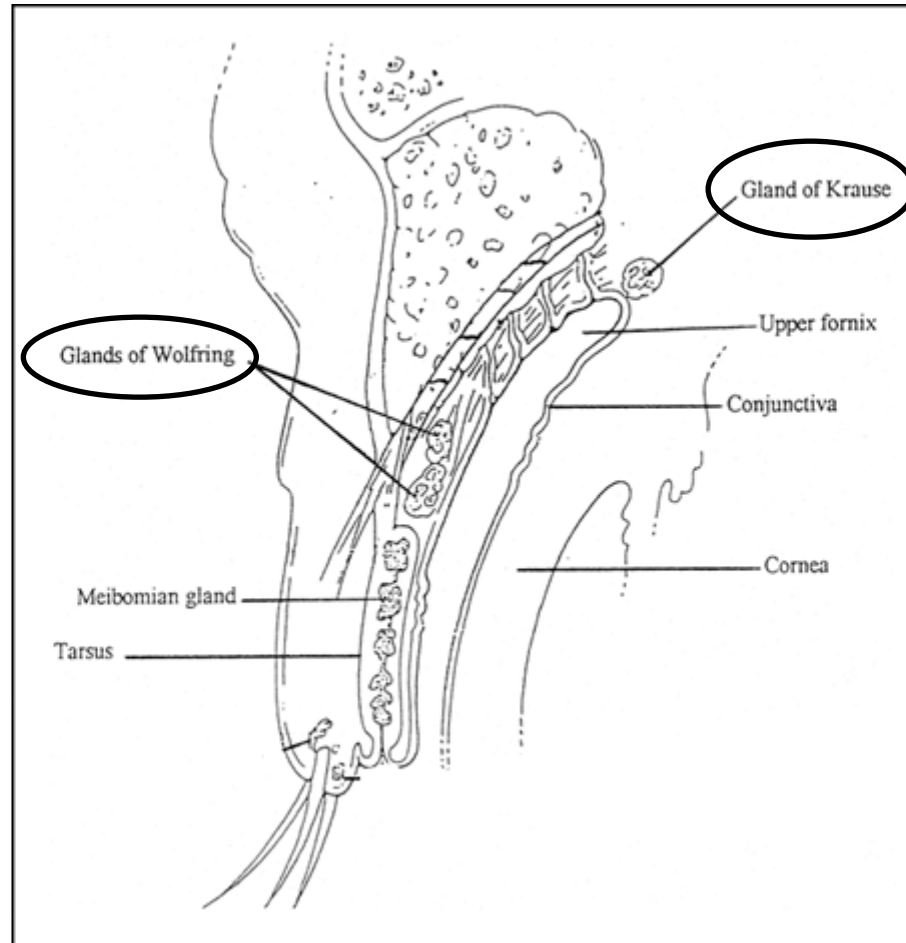
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Glands of the Orbit (*but not that one*)



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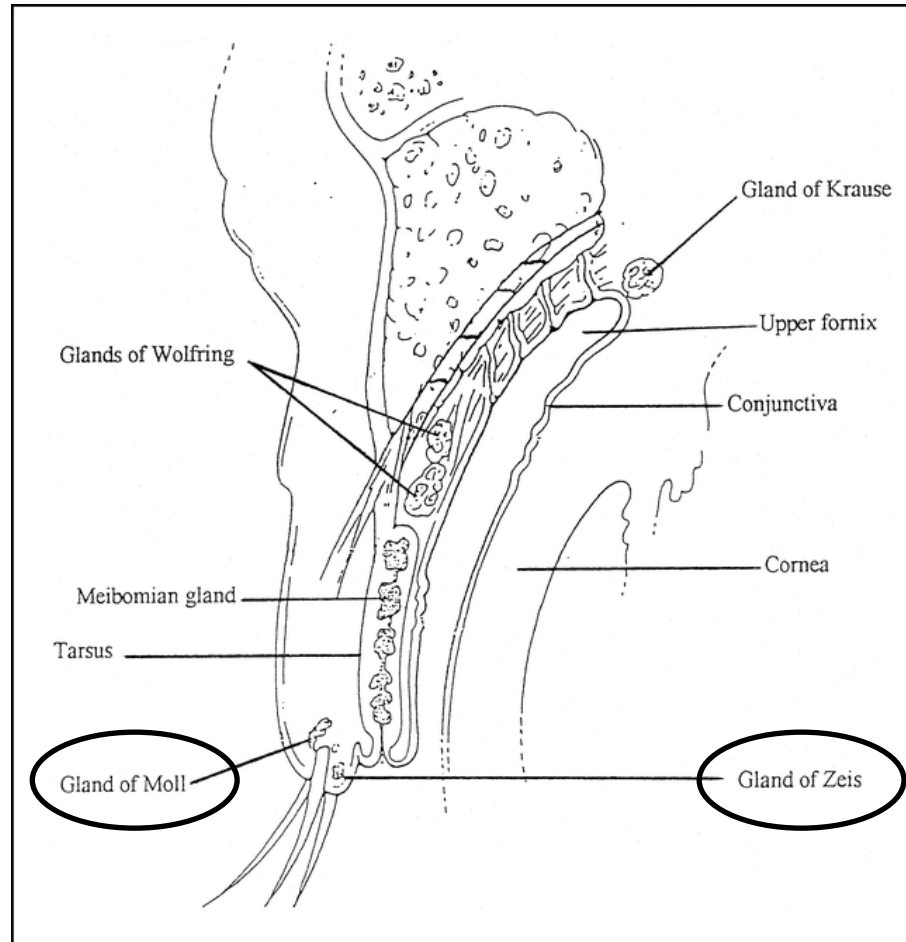
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Glands of the Orbit (*but not that one*)



Glands of Zeiss and Moll



Q

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 - Zeiss glands are gland type glands
 - Moll glands are ditto glands



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- Where are they located? The **palpebral** and **forniceal conjunctiva**
- What are the *glands of Zeiss and Moll*? Glands of the **eyelash pilosebaceous unit**.
 - Zeiss glands are **sebaceous** glands
 - Moll glands are **sweat** glands