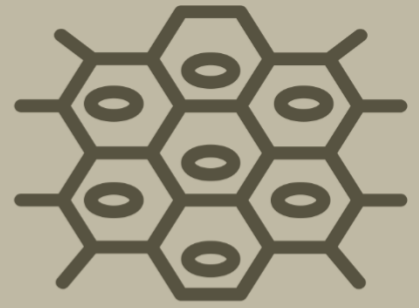
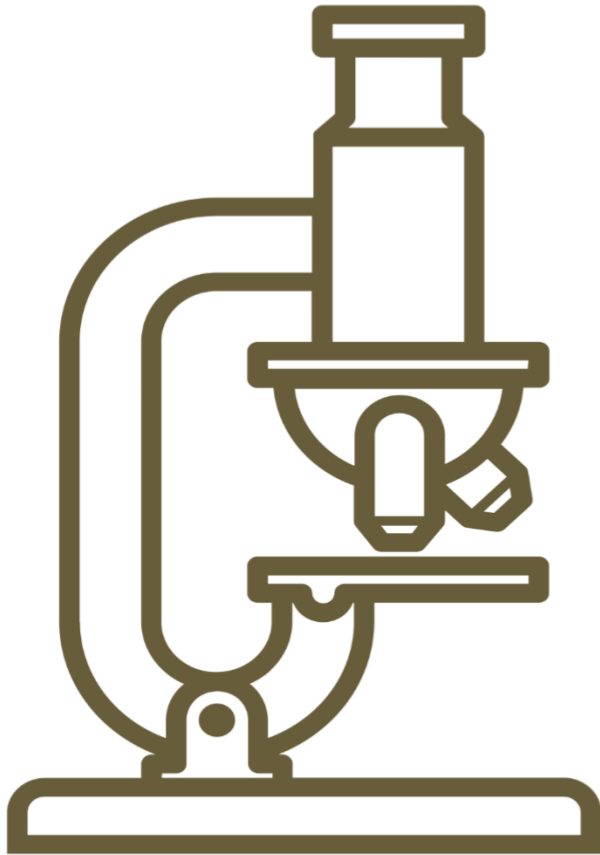




# HISTOLOGY



SHEET NO.

**WRITTEN BY:** Mays Abu-Sara

**EDITED BY:** Leen Hawamdeh  
& Salma Al-Zaben

**DOCTOR:** Dr. Ghada Abu El Ghanam



## **Secretory Epithelium & Gland**

In previous sheets we were talked about one of the main two types of epithelial tissue: **Lining Epithelium**.

And in this sheet, we will talk about the other type which is **Secretory Epithelium** and mainly about another specialised organ that has major functions called **Glands**.

Epithelial cells that function mainly to **produce and secrete various macromolecules**, so we have secretory cells that may synthesise , store and release **proteins, lipids or complexes of carbohydrates and proteins**. We have a type of cells that may secrete all of this secretion such as **Mammary gland (غدد الحليب)**.

**→ To be understanding ... why mammary glands secrete all type of secretion? simply the mammary gland is female breast, so for the newborn babies and they life after that, they need food that have everything in it.**

We have to understand that all gland comes from epithelial tissue, and these glands variety in the places where they are, shape and size.

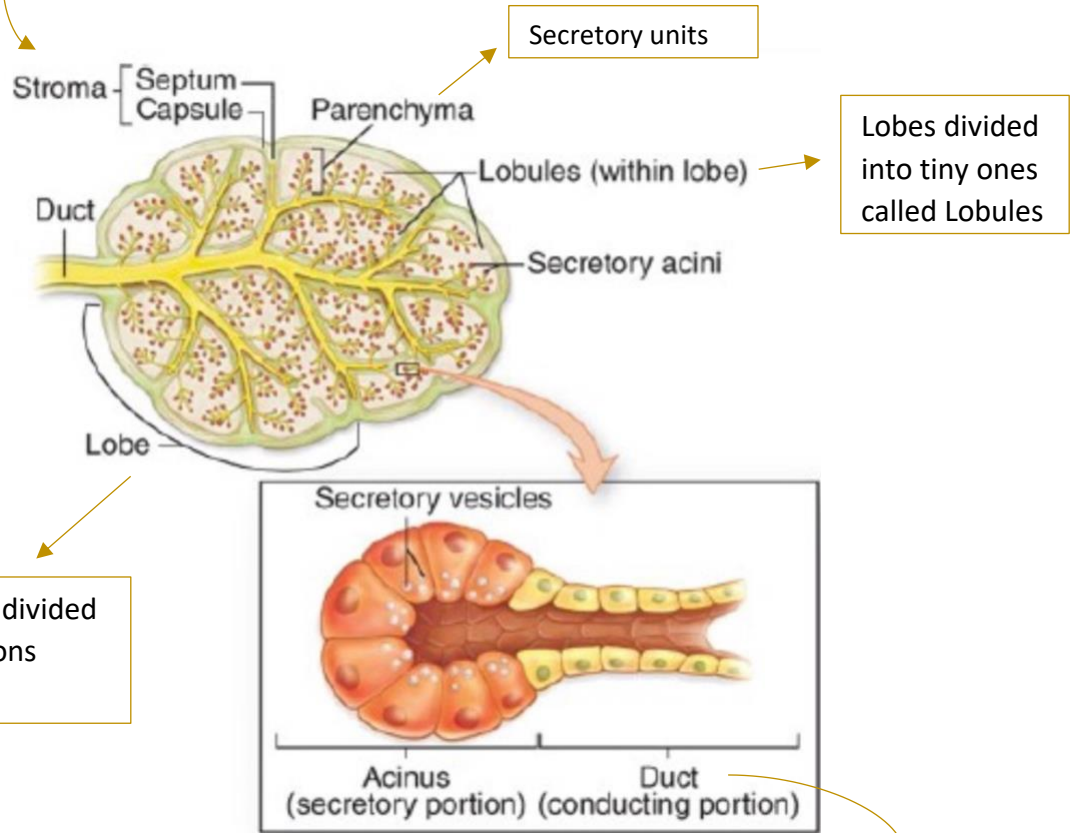
We have small glands such as **Goblet cells**, and big ones such as **pancreas** and **thyroid gland** ...etc

In next slides we will discussing:

- 1- Organization of gland.
- 2- Development of gland.
- 3- Classification of gland.
- 4- Goblet cells.
- 5- Mode of secretion.

## 1-Organization of gland:

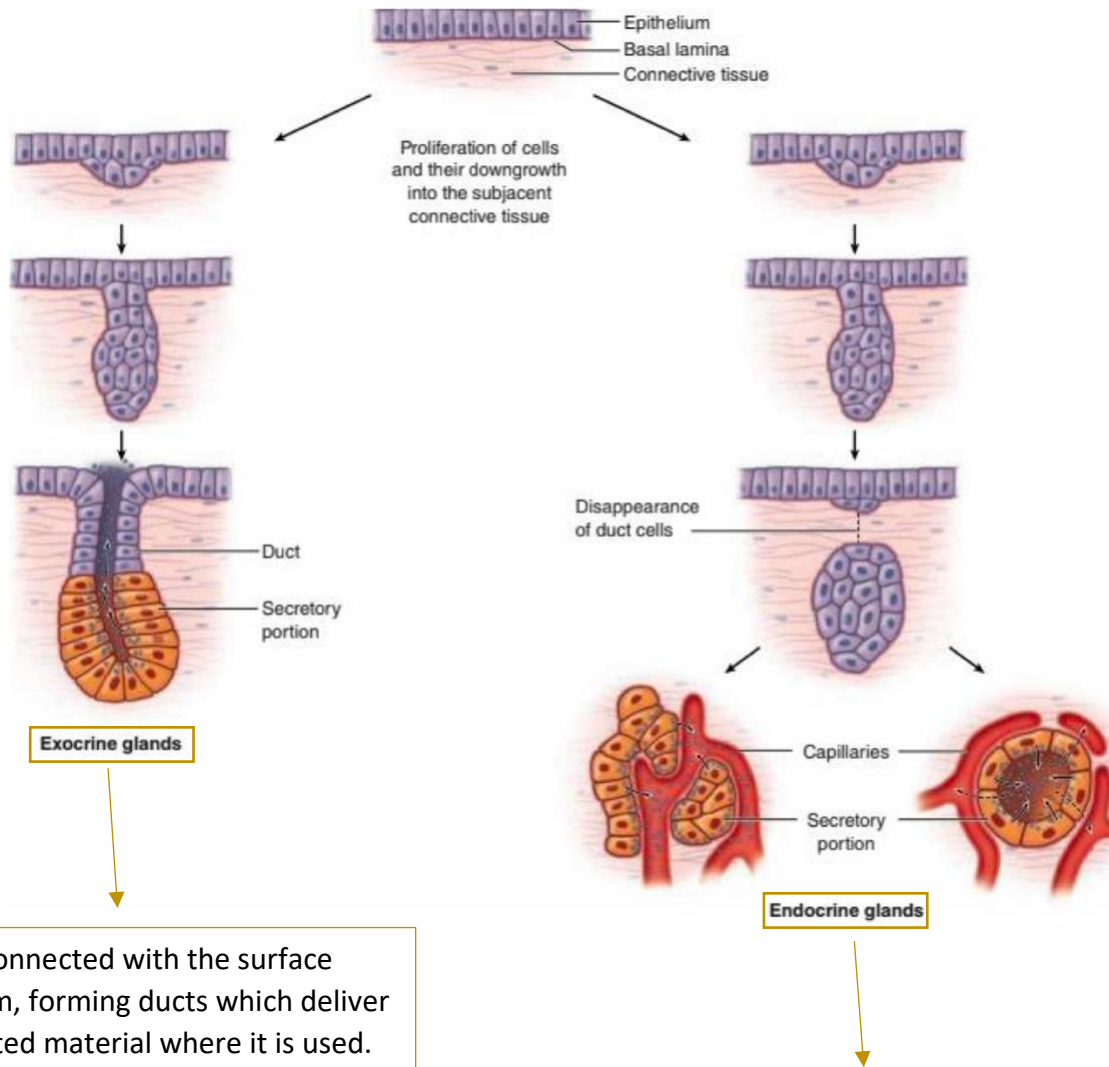
- Glands organized as a **secretory portions** and **ducts**.
- Secretory portions synthesize the secretion and then ducts modifying it into final product then transport it out of the gland.
- **Example:** consider it's a salivary gland (غدة لعابية) so secretory portions produce saliva (اللعاب), then saliva will pass through the ductal cells, ductal cells will do modifying on the saliva into final saliva and transport it out of the gland.
- The secretory units are always supported by a stroma of connective tissue.



- ❖ انتبه إنه ال duct وظيفتها ليست النقل للخارج فقط ، إنما بتعمل تعديلات على الإفرازات لتحويلها للمنتج النهائي قبل إفرازها .
- ❖ هاي المعلومة مش موجودة بالاسلايد بس الدكتور ركزت عليها 😊

## 2-Development of gland:

- Glands develop from covering epithelia in the fetus by cell proliferation and growth into the underlying connective tissue followed by further differentiation.



Remain connected with the surface epithelium, forming ducts which deliver the secreted material where it is used.

They lose the connection to the surface epithelium, so they lack ducts, and instead capillaries are adjacent to the glands to absorb their secretion to transport it in blood to target cells that have receptors for that secretion.

### **3-Classification:**

To classify the gland, we refer to:

1- Number of cells that make the gland:

→ One cell then it's **Unicellular**.

→ More than one cell then it's **multicellular**.

2- The nature of the duct, how?

→ If the gland is only one duct and there is **no branching**, then it's **Simple**.

→ If the gland comes from **converging of smaller ones**, then it's **Compound**.

3- Shape of secretory portions, it divides into:

→ **Tubular** (fingerlike) either short or long and coiled.

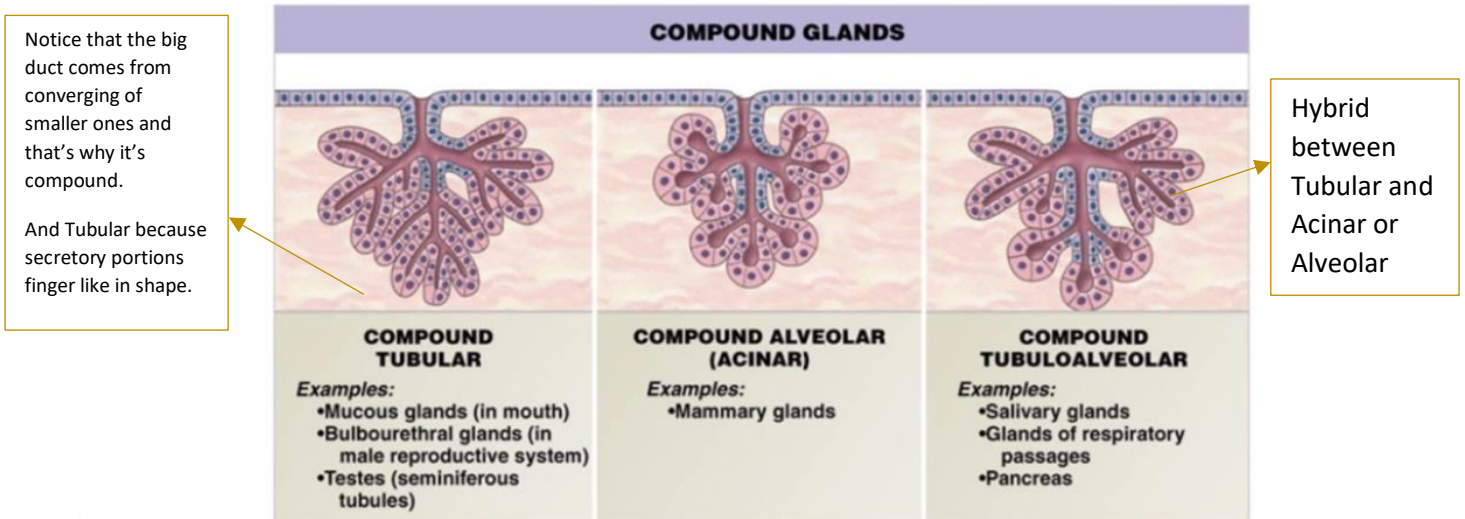
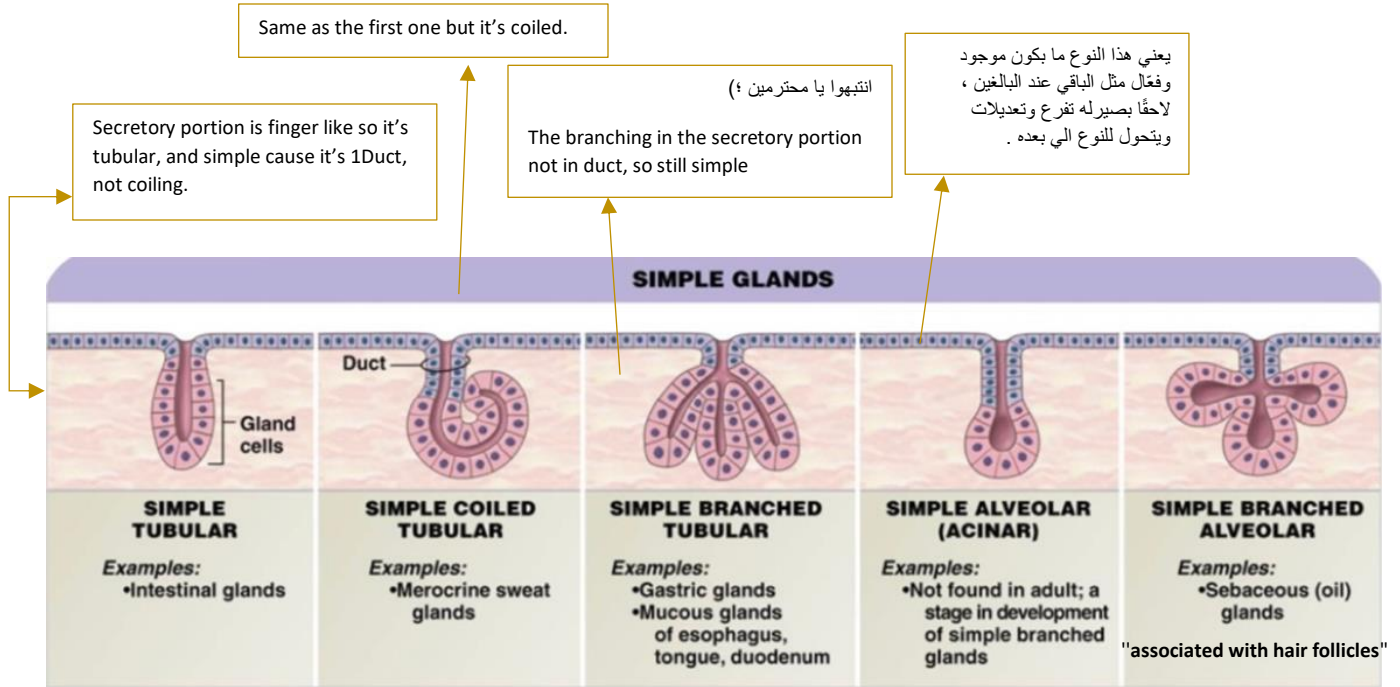
→ **Acinar or Alveolar** (rounded and saclike).

Note:

There are some differences in the nature of secretion between Tubular and Acinar gland:

- Tubular: usually their secretion is more viscous (لزجة).
- Acinar: their secretion is more fluid in nature (تميل للسيولة أكثر).

When we talk about branching to determine whether it's simple or compound gland, we mean branching in duct not in secretory portions.



- Duodenum: the first part of small intestine.
- Sebaceous glands: adipose glands that associated with hair follicles.



❖ للأسف ضروري تحفظوا وبين كل نوع موجود ، بيجي عليه أسئلة دائماً:

## ❖ Extra slides about classification

### Simple Glands

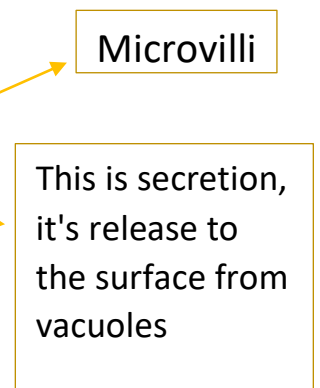
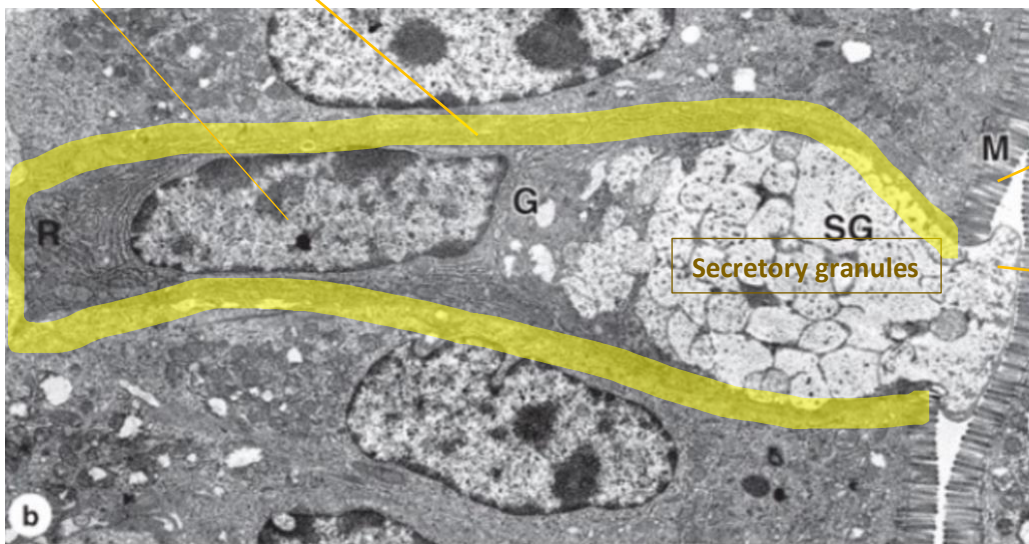
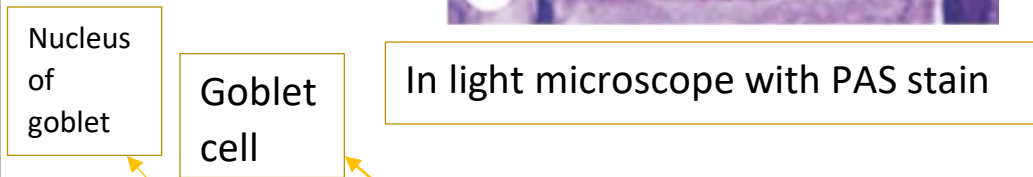
<i>SIMPLE Glands</i> (Ducts Do Not Branch)					
Class	Simple Tubular	Branched Tubular	Coiled Tubular	Acinar (or Alveolar)	Branched Acinar
Features	Elongated secretory portion; duct usually short or absent	Several long secretory parts joining to drain into 1 duct	Secretory portion is very long and coiled	Rounded, saclike secretory portion	Multiple saclike secretory parts entering the same duct
Examples	Mucous glands of colon; intestinal glands or crypts (of Lieberkühn)	Glands in the uterus and stomach	Sweat glands	Small mucous glands along the urethra	Sebaceous glands of the skin

### Compounds Glands

<i>COMPOUND Glands</i> (Ducts from Several Secretory Units Converge into Larger Ducts)			
Class	Tubular	Acinar (Alveolar)	Tubuloacinar
Features	Several <i>elongated</i> coiled secretory units and their ducts converge to form larger ducts	Several <i>saclike</i> secretory units with small ducts converge at a larger duct	Ducts of both tubular and acinar secretory units converge at larger ducts
Examples	Submucosal mucous glands (of Brunner) in the duodenum	Exocrine pancreas	Salivary glands

## 4-Goblet cells:

- The simplest type of glands, it's unicellular and specialized in mucus secretion.





## **5-Mode of secretion:**

1-Merocrine secretion: the most common method of protein or glycoprotein (which is mostly protein), in this mode the gland releases their product into vesicle by exocytosis.

Example: (**Salivary Glands**).

2-Holocrine secretion: the cell accumulate product continuously as they enlarge, then by disintegrating (تحلل) of the whole cell with its products inside become the secretion and releases into the gland's lumen.

Example: (**Sebaceous Glands**).

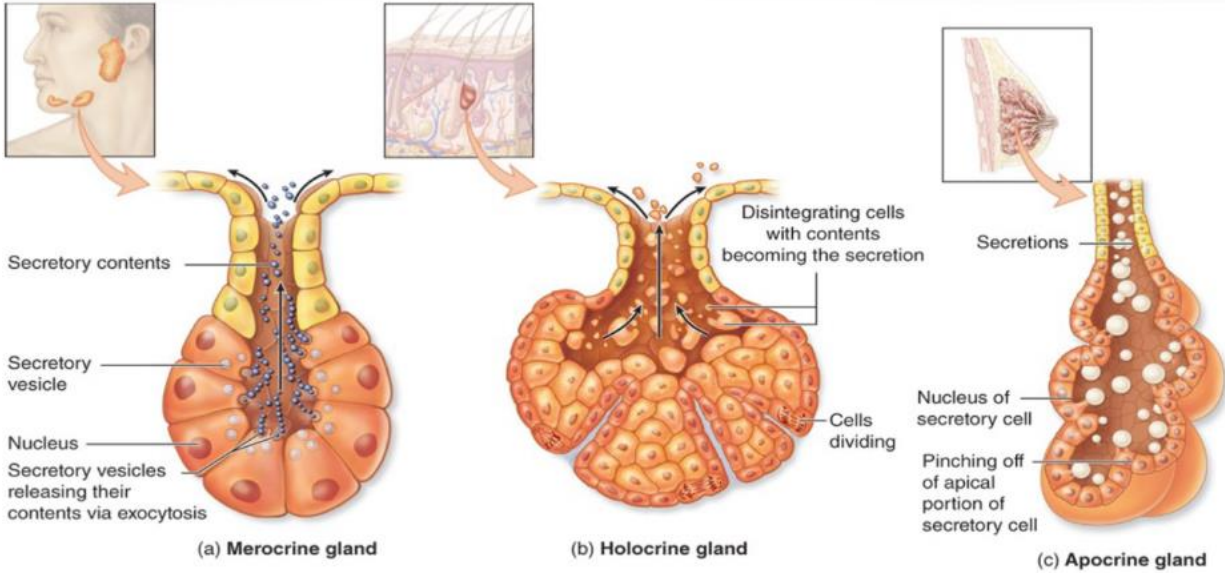
3-Apocrine secretion: it's a hybrid mode between merocrine and Holocrine. The cell accumulates its product at the apical ends, then part of the apical structure of the cell will detach and leave the cell.

Example: (**Mammary Glands**).

**➔ CHECK THE PICTURE IN THE NEXT SLIDE TO UNDERSTAND BETTER 😊😊.**



## MODE OF SECRETION



It's important to differentiate between these two types:

Holo: all the cell with its products become the secretion.

Apo: just part of the apical structure become the secretion.

## ***THE END OF SECRETORY EPITHELIA & GLANDS SHEET***

شعار المرحلة: مفضيش وقت للامتحان، فذكر وانتي بتعيط:)