

### SECRETION Introduction

#### 3 distinct cellular activities:

- **Uptake** of extracellular fluid
- **Processing** of these within the cells --> Produce a more complex product
- **Active release** of these product

#### NOTE:

Different from EXCRETION, the passive release of waste products

### Introduction (cont.)

#### 2 functional types of glands:

#### Exocrine:

- Release secretory products onto epithelial surface via a **duct**

#### Endocrine:

- No ducts connecting to epithelial surface
- Secrete products into blood or lymph (Product is Hormones)

Ex: salivary, sweat glands

Ex: pancreas, thyroid gland

### Methods of secretion

**Merocrine/Eccrine**  
Tuyến toàn vẹn

- Exocytosis of vesicles

- Most common form of secretion

- Ex: Sweat glands, salivary glands

**Apocrine**  
Tuyến bán hủy

- Vesicles accumulate at apical portion

--> mass of cytoplasm and vesicles are pinched off

Ex: mammary gland, some sweat glands

**Holocrine**  
Tuyến toàn hủy

- Secretory products accumulate and the cell ruptures

--> Death of cell

Ex: Sebaceous glands

### Glandular Structure

#### Unicellular

#### Goblet cells:

- Found in: digestive and respiratory tracts
- > Secrete mucin -> Mucous

#### Multicellular

Most glands

### Unicellular Exocrine Gland

#### Goblet cell

- Amongst columnar walls of epithelium
- Found in: respiratory/digestive tracts
- Extended apical portion (*theca*) contains **mucigen droplet**

- Released by **melocrine** (toàn vẹn) secretion

--> Mucigen + H<sub>2</sub>O = Mucous

- Basal nucleus

### Multicellular Exocrine Glands

- Secreted onto epi surface via ducts
- The deeper cells within CT is secretory
- Secretion is discharged from secretory cells, into the duct, onto epi surface

### Classification of Multi Exo Glands

#### Classified by:

#### Ducts:

- **Simple:** single, unbranched duct (may be uncoiled)

- **Simple branched:** 2 or more secretory areas dump into a single duct

- **Compound:** branched duct system

#### Secretory End Pieces:

- **Tubular:** glandular cells form tubes

- **Alveolar:** rounded cluster of cells

- **Tubuloalveolar:** contain some tubular/alveolar units as well

### Classification of Multi Exo Glands (cont.)

	Simple	Simple Branched	Compound
<b>Tubular</b>	Simple Tubular	Simple branched tubular	Compound Tubular
<b>Alveolar</b>	Simple Alveolar	Simple branched alveolar	Compound alveolar
<b>Tubuloalveolar</b>	X	X	Compound tubuloalveolar

### Nature of Secretory Product

Exocrine can be described based on nature of **Secretory products:**

- **Mucous glands:** thick, sticky, glycoproteins
- **Serous glands:** watery, contains enzyme
- **Mixed:** contains more than 1 cell type --> secrete both Serous and Mucous

### Control of Exocrine Secretion

- Most glands **secrete at low level** continuously
- **Rate modulated by:** hormones, autonomic innervation, or both
- **In glands with alveoli** --> contractile myoepithelial cells contract to squeeze secretion into ducts

### Endocrine

- **Lost connection with epi surface**
- **Secrete products directly into blood or lymph**
- **Well vascularised**
- **Secretions are hormones:** proteins, steroids
- **Adapted for storing and releasing when required**
- **Often form cords or clumps**

### Thyroid gland

Endocrine cells are arranged into follicles surrounding a mass of secretory product (since it stores the product extracellularly) (colloid, thyroglobulin)

