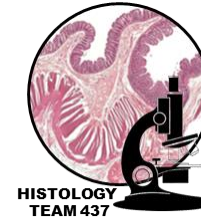




# Upper Respiratory Tract

(Nasal cavity, Paranasal sinuses and Larynx)



**Red: important.**

**Black: in male | female slides.**

**Gray: notes | extra.**

Editing file

غيداء آل مضمع  
عبدالرحمن الحيسوني

Revised by

## ➤ OBJECTIVES

- **Vestibule** of the nasal cavity.
- **Respiratory mucosa** of the nasal cavity.
- **Nasal septum**.
- **Olfactory mucosa** of the nasal cavity.
- **Mucosa of the paranasal sinuses**.
- **Larynx**.



# Respiratory System

## Tracts

Upper

Nasal cavity

Paranasal sinuses

Larynx

Lower

Trachea

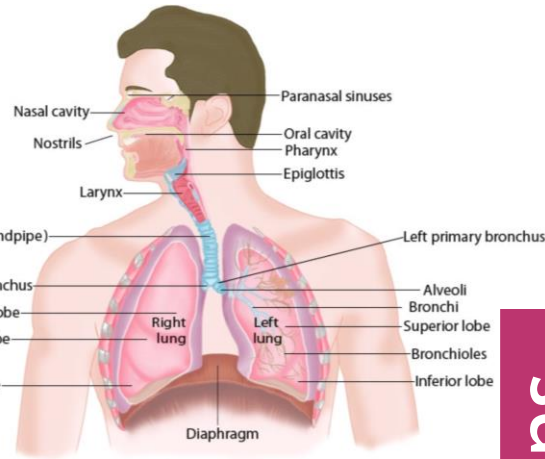
Bronchi

Bronchioles

lung

Upper Respiratory Tract

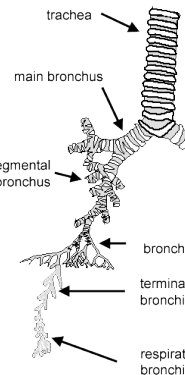
Lower Respiratory Tract



## Portions

Conducting

Respiratory



Nasal cavity

Nasopharynx

Larynx

Trachea

Extrapulmonary bronchi

Intrapulmonary bronchi

preterminal bronchioles

Terminal bronchioles

Respiratory bronchioles

Alveolar ducts

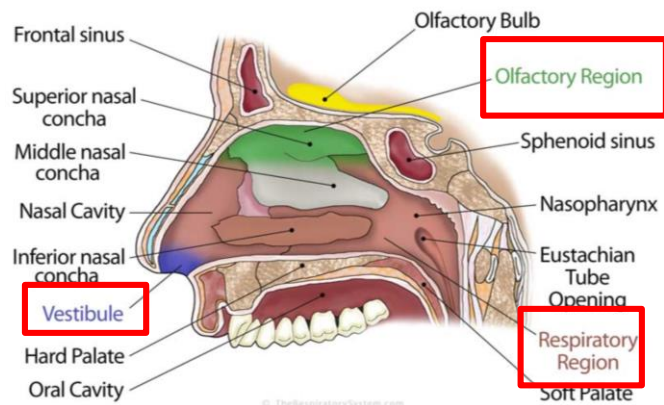
Alveolar sacs

Pulmonary alveoli

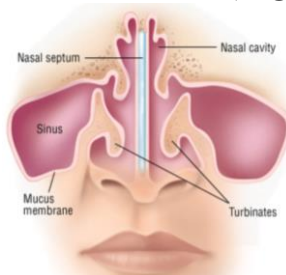


## ➤ Nasal Cavity (N.C.)

- Anterior portion of N.C. : Vestibule
- Posterior portion of N.C. :
  - Respiratory region
  - Olfactory region

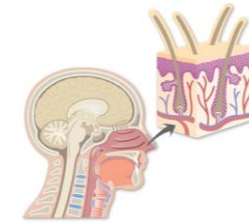


- The nasal septum divides the nasal cavity into two halves (right and left).



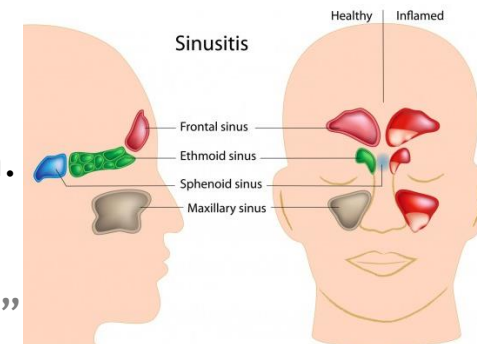
## ➤ Vestibule

- Lining (line with thin skin)
  - 1- Epidermis: (Keratinized stratified Squamous epithelium).
  - 2- Dermis.
- Contents:
  - 1- Vibrissae: stiff hairs.
  - 2- Sebaceous glands.
  - 3- Sweat glands
- Wall:
  - 1- Hyaline cartilage.
  - 2- Cancellous (spongy) bone

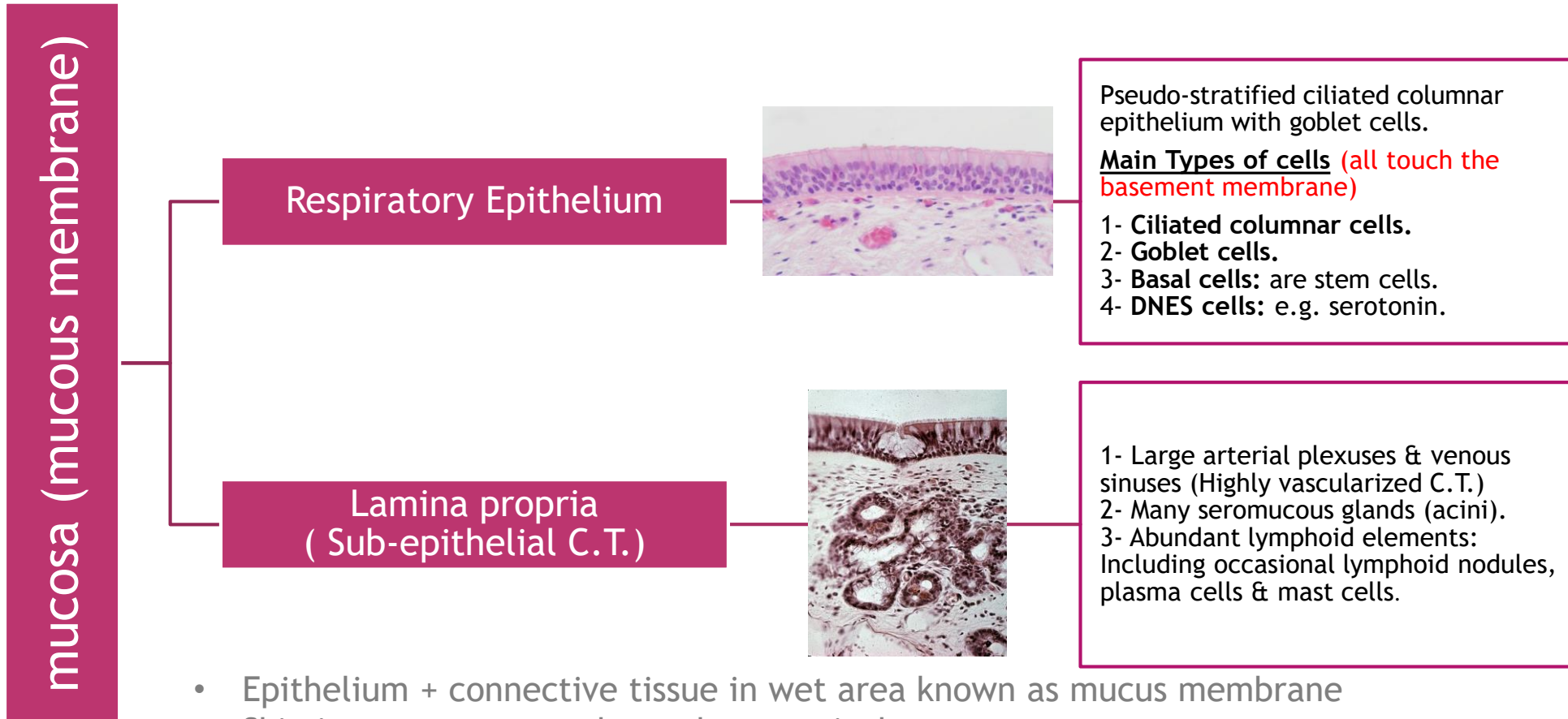


## ➤ Paranasal sinuses

- Lining:
  - 1- Respiratory Epithelium.
  - 2- Lamina propria.
- Clinical application: Sinusitis: “إلتهاب الجيوب الأنفية”  
Accumulation of air and bacteria in close sinuses



## ➤ Respiratory region (Area) of nasal cavity



- Epithelium + connective tissue in wet area known as mucus membrane
- Skin is not mucus membrane because it dry
- Function of Paranasal sinuses is Lighten the skull and it help in speech
- Olfactory area is the only site that dose not have mucus secretion but it has serous secretion
- The only neuron that can renewing from his stem cell located in olfactory area

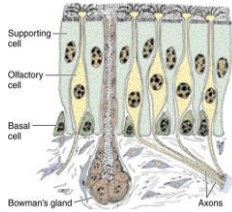


## ➤ Olfactory region (Area) of nasal cavity

### (Olfactory mucosa)

#### (Site)

- 1-roof of nasal cavity.
- 2-upper part of nasal septum.
- 3-over superior concha.



olfactory Epithelium

#### pseudo-stratified columnar epithelium

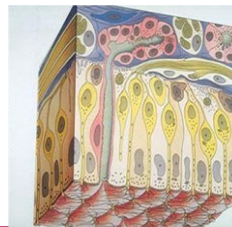
#### 1- olfactory cells (olfactory nerve cells):

- **bipolar** neurons
- Dendrite has olfactory vesicle that has **nonmotile cilia**
- Axons are **unmyelinated** with Schwann-like cells
- Axons will collect in the lamina propria to form **bundles of nerve fibers**
- Bundles will collect to form the olfactory nerve

#### 2- sustentacular (supporting) cells:

are columnar cells  
**Function:** Physical support and nourishment for olfactory cells

**3- basal cells:** pyramidal in shape, basal in position and act as stem cells



Lamina propria

#### Highly (richly) vascularized loose C.T.

#### Contents:

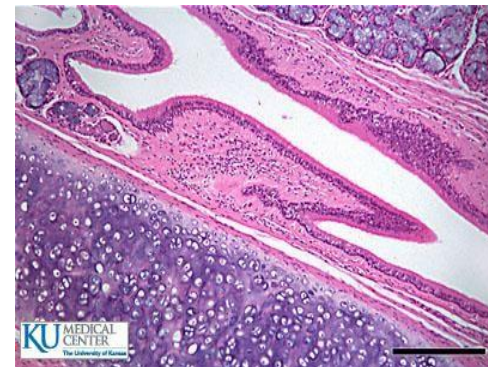
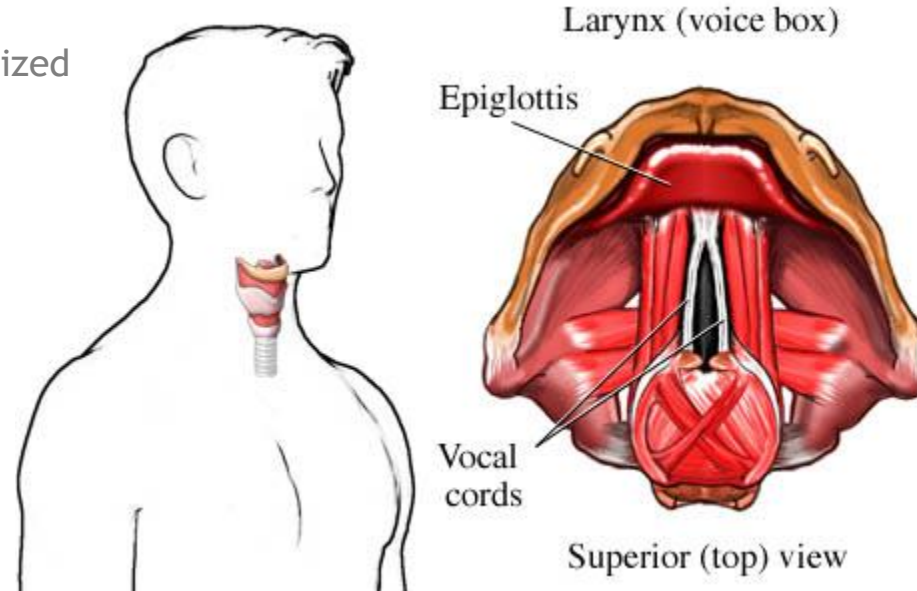
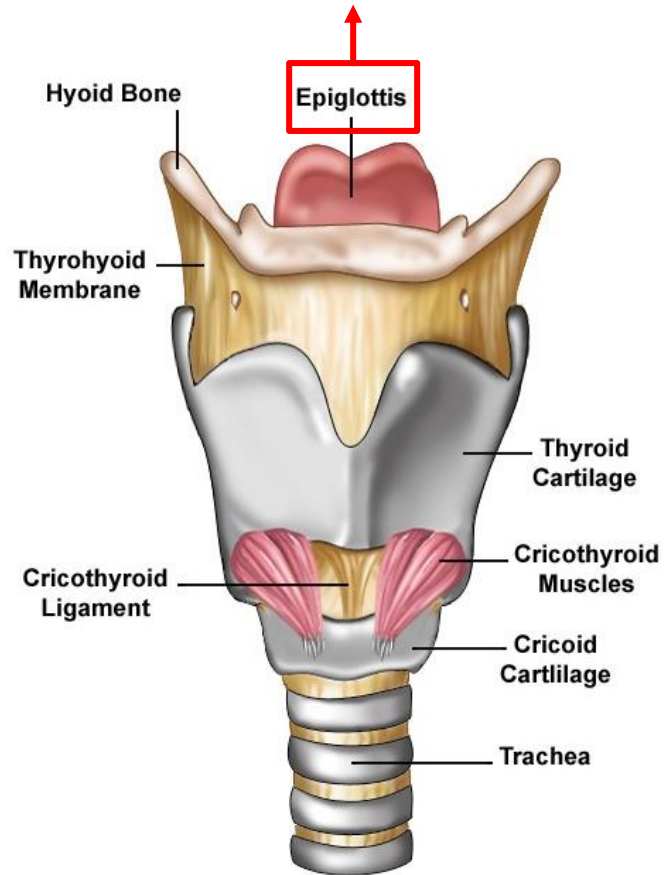
- 1- **Bowman's glands (olfactory glands):** are serous acini
- 2- Bundles of **unmyelinated** nerve fibers: are axons of olfactory nerve cells + Schwann-like cells (glial cells)
- 3- **Rich vascular plexus**
- 4- **Numerous lymphoid elements**



## ➤ Larynx

Epiglottis cover by tow type of epithelium:

- Anterior: stratified squamous epithelium non keratinized
- Posterior: pseudo stratified columnar epithelium



## ➤ Larynx

MUCOSA				
<b>Epithelium</b>		<b>Lamina propria</b>	2 pairs of shelf-like mucosal folds	
Respiratory epithelium	Non keratinized stratified squamous epithelium		<b>Vestibular folds</b> Immovable	<b>Vocal folds (cords)</b> <b>No lymphoid nodules</b> <b>No seromucous glands</b>
Pseudostratified ciliated columnar epithelium with goblet cells	- Vocal folds - Superior surface of epiglottis		- Respiratory epithelium - Lamina propria: Loose C.T. with seromucous glands lymphoid elements & adipose cells	- epithelium: Non keratinized stratified squamous epithelium - Lamina propria: C.T. containing bundles of elastic fibers and skeletal muscle
CARTILAGE			MUSCLES	
<b>1- Hyaline cartilages:</b> ex- Thyroid cartilage <b>2- Elastic cartilages:</b> Ex- Epiglottis		<b>Extrinsic and intrinsic muscles:</b> all are skeletal		-





➤ **QUESTIONS:**

**Q1: What of these structures is part of Conducting portion?**

- a) Terminal bronchioles    b) Alveolar ducts    c) Alveolar sacs    d) Pulmonary alveoli

**Q2: What of these structures is part of Respiratory portion?**

- a) Alveolar ducts    b) Alveolar sacs    c) both a&b    d) non of them

**Q3: What structure of nasal cavity divides the nasal cavity into two halves (right and left)?**

- a) Nasal septum    b) Nasal sinuses    c) Vestibule    d) Olfactory region

**Q4: Vestibule of Nasal cavity contain?**

- a) Vibrissae (stiff hairs)    b) Sebaceous glands    c) Sweat glands    d) all of them

**Q5: Which of them contain large arterial plexuses & venous sinuses ?**

- a) Lamina propria of olfactory mucosa    b) Lamina propria of mucous membrane  
c) Lamina propria of larynx    d) Lamina propria of paranasal sinuses

**Q6: The function of Sustentacular (supporting) cells is?**

- a) Physical support    b) nourishment for olfactory cells    c) both a&b    d) non of them

C -9  
B -5  
D -4  
A -3  
C -2  
A -1



**Q7: What shape of basal cells of Olfactory mucosa?**

- a) Round in shape   b) triangular in shape   c) Pyramidal in shape   d) irregular shape

**Q8: Olfactory cells are?**

- a) bipolar neurons   b) unipolar neurons   c) non polar neurons   d) don't have neurons

**Q9: Inside mucosa when we found Non keratinized stratified squamous epithelium?**

- a) Vocal folds   b) Superior surface of epiglottis   c) both a&b   d) non of them

**Q10: What type of Epithelium is the vocal folds (cords) have?**

- a) non keratinized stratified columnar   b) keratinized stratified columnar  
c) non keratinized stratified squamous   d) keratinized stratified squamous

**Q11: Vestibular folds In mochas of larynx is?**

- a) Immovable   b) movable   c) regular   d) irregular

**Q12: Thyroid cartilage is example of?**

- a) Elastic cartilage   b) Hyaline cartilage   c) Fibrocartilage   d) Non of them

12-B  
11-A  
10-C  
9-C  
8-A  
7-C



### Team members :

Hussain Alkharboush  
Ebtesam Almutairi  
Shahad Alzahrani

Tareq Allhaidan  
Marwah Alkhalil  
Rinad Alghoraiby

### Team leaders :

Khalid Fayez Alshehri  
Rawan Mohammad Alharbi



[Twitter.com/Histology437](https://twitter.com/Histology437)



[HistologyTeam437@gmail.com](mailto:HistologyTeam437@gmail.com)

