

Histology Lec 1

* we divide the respiratory tract into two parts

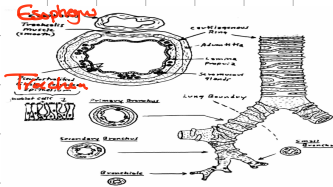
* Between these two parts there is a transitional area (Weak Part) → could transform to malignant area.

Upper Conducting Part

* only air passage & warming & cleaning it.

* starting from the nose → larynx → trachea → 1° 2° 3° bronchi

*



Tracheal section :- Many layers :-

- Mucosa** → living epithelium → pseudostratified ciliated columnar epithelium. ⊕ goblet cells.
lamina Propria → loose connective tissue with seromucous gland
Muscularis Mucosa.
- Submucosa** → dense connective tissue contains blood vessels, nerves, glands.
NOTE: could be found in submucosa also.
- supportive layer** → hyaline cartilage → for air passage

NOTE: Hyaline cartilage has different shapes according to its site :-

- Trachea → C shape as the posterior part is absent because of esophagus → instead of that posterior absent part, there is smooth muscle called trachealis muscle taking its place.
- left & right main bronchus → plates of hyaline

NOTE: as we move distally hyaline cartilage decreases until it disappears when reaching bronchioles & smooth muscles increases by moving distally

4) Adventitia → connective tissue layer → the last layer

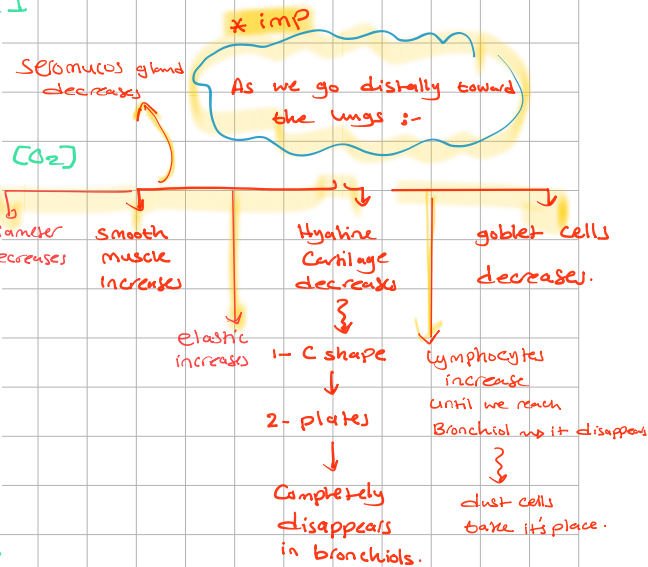
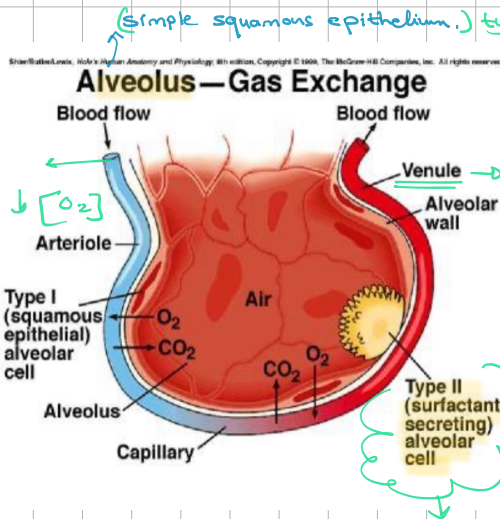
histological characters :-

- * Bronchi → contain cartilage
- * Bronchiole → no cartilage & increased smooth muscle content
- * Lung & alveoli → elastic fibers

* Smoking effect on respiratory system :-

its all about nicotine that damages dynein [which helps in the outward motility of cilia to get rid of foreign bodies] → so this cause chronic infection in the lungs & immotile syndrome → complications :- sterility in males & sperms are not moving = Kartagener syndrome.

Gas exchange



Cuboidal cells

* these cells secrete surfactant which decreases surface tension of the alveoli

* decreased surfactant level cause respiratory distress syndrome in babies

* surfactant secretion starts at 8th & 9th months of pregnancy.

Lower respiratory part. Simple squamous

* gas exchange

* include :- respiratory bronchiole &

alveolar duct & Alveoli → simple squamous

The lining changes when we reach terminal bronchiole



Respiratory epithelium ^{*imp}

Mainly lined by pseudost. Columnar epithelium with goblet cells.

Contains 5 types of cells \rightarrow all of them lie on basement membrane \rightarrow which is thick membrane.

①	②	③	④	⑤
Diffuse neuroendocrine cells = Kulchitsky cells * regulate secretion	brush cells with microvilli * sensory receptors \downarrow afferent nerve endings on their basal surface.	Serous cells with serous secretory granules	Basal cells / short cells * reserve cells, able to undergo mitosis * small $\frac{1}{2}$ rounded * on the base $\frac{1}{2}$ don't reach the surface.	Pseudostratified ciliated Columnar + goblet cells * Most abundant type. * all cilia are directed toward basal bodies * abundant mitochondria because we need energy for cilia function.

* Dynein \rightarrow protein participate in ciliary movement

Nasal Cavity

thick mucosa.

subdivided into
Vestibule

Histology \rightarrow Modified skin contains
hair follicles vibrissae
sweat glands
sebaceous glands

Respiratory area

respiratory \rightarrow Pseudost. ...
+ olfactory = bipolar cells.

* In the roof \rightarrow bipolar cells
* contains :-

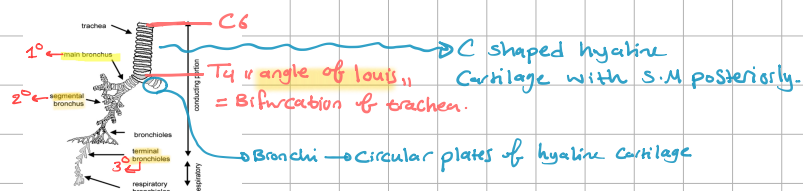
- 1) filaments of olfactory nerve
olfactory region
- 2) Bowman's gland \rightarrow in the submucosa
 $\frac{1}{2}$ opens into the surface
Function :- dissolvent of odor
- 3) supporting cells \rightarrow between bipolar cells = sustentacular cells
- 4) basal cells for mitosis.

Paranasal sinuses

thin mucosa.

- * contain air \rightarrow their ducts open into the lateral wall of the nose.
- * same epithelial lining as nasal cavity but thinner.
- * few goblet cells
- * the lamina propria contains a few small glands.

Bronchial tree



Right primary main bronchus VS left primary main bronchus

- shorter
- wider
- more vertical.

- longer
- narrower
- more horizontal

foreign bodies.

Branchi

contains cartilage \rightarrow plates.
divide into :-

- Extrapulmonary
Primary
- Intrapulmonary
"Lobar"
Secondary
- tertiary
= Bronchopulmonary Segment.

Bronchioles

- * small diameter \approx 1mm or less
- * lining epithelium \approx ciliated columnar or cuboidal
- * no cartilage.