 **1-Nose:**Section, almost parallel to the nasal ridge, through the soft tissue of the outer nose. It contains the following elements:. Outer surface, skin, multilayered keratinizing squamous epithelium-epidermis.. Septum cartilage .. Lower nasal cartilage .Nasal apex.. Sebaceous gland. .Hair follicle. Dense connective tissue. **2-Nasal Cavity and Nasal Sinuses:**Frontal section through one half of the visceral cranium. It shows the nasal cavity and the nasal sinuses. The nasal conchae enlarge the surface of the respiratory region. They are covered with a ciliated multilayered columnar epithelium, which contains numerous goblet cells . The voluminous corpus cavernosum in the mucosa of the nasal cavity stands out. It reaches a considerable width,especially in the lower and middle concha.

 **3-Larynx:**Cross-section of the throat at the cricoid cartilage. The mucosa of the airways is covered with amultilayered columnar ciliated epithelium that contains mucin-producing goblet cells ,olfactory region of the upper nasal concha and the upper nasal septum,the mucosa of the vocal cords and the mucosa of the small bronchia. **4-Trachea:**This cross-section of the trachealwall shows the following layers: *tunica mucosarespiratoria* with a multilayered ciliated epithelium and *seromucous tracheal glands*  in the lamina propria mucosae.The tubular invagination is a secretory duct . Many secretory ducts widen to funnel-like bays when they end on the surface epithelium. The airways do not have a submucosal layer as a cushion to dampen lateralmovement. The mucosa is usually tightly attached to its base. This keeps the airways open. The following layer represents the hyaline tracheal cartilage . It is covered by a strong perichondrium on the side of the mucosa. The very strong perichondral connective tissue layer is stained orange.The tunica adventitia (stained red).

 **5-Trachea:**The surface of the tunica mucosa consists of a typical respiratory epithelium.It is a ciliated multilayered columnar epithelium, which contains goblet cells.The epithelium is layered over a strong basal membrane. The epithelial layer is followed by the wide, highly vascularized lamina propria mucosae, which contains collagen fibers, longitudinally oriented elastic fiber meshwork and many seromucous tracheal glands. **6- Bronchus :** The mucosa, which lines the bronchus, is folded. This is an artifact. It is caused by the contraction of the smooth muscles during tissue fixation . The mucosa is covered only by a ciliated, single-layered columnar epithelium. This epithelium contains goblet cells.The lamina propria (stained blue) is followed by a thin layer of circular muscle cells , which are sheathed by elastic fibers. The bronchial glands are situated outside the tunica muscularis in the eribronchial connective tissue.

 **7-****Alveolar ducts and alveoli:** shows *alveolar ducts* and *alveoli*, which facilitate the gas exchange . The alveoli have six to 12 loops of capillaries weave around each alveolus. The *interalveolar septum* is the common wall between adjacent alveoli. The interalveolar partitions are called alveolar septa. Rings of smooth muscles, which appear knob-like in cross-sections, partition the peripheral septa. This ring of smooth muscles is covered with cuboid epithelium.The upper right of the figure shows a pulmonary vessel.

**8-****Respiratory bronchioles****:***Respiratory bronchioles* divide into wide *alveolar ducts*  . Alveoli and alveolar sacs are arranged alongside the alveolar ducts and are continuous with them.They open into the long alveolar duct. The walls of the alveolar ducts widen at the end. There are muscle cells in that end region .A thin connective tissue septum (*alveolar wall*) is shared between the epithelia of two adjacent alveoli. The connective tissue consists of a network of collagen and elastic fibers. The pulmonary capillaries are part of this meshwork.



**9-Lung:**The rich capillarization of the *alveolar septa* is clearly visible. There are still erythrocytes in the lung capillaries. Note the extremely thin blood-air barrier. It consists of non fenestrated capillary endothelium and the continuous epithelial layer of the pulmonary alveoli (alveolar epithelium). Two basal membranes separate both layers. The alveolar epithelium consists of two different cell types, the flat *alveolar epithelial* cells or type I pneumocytes, and the large type II pneumocytes. *Type I pneumocytes* contribute about 93% of the alveolar surface cells. The *type II pneumocytes* produce a thin surfactant lipoid covering.Due to their numerous inclusion bodies (*lysosomes*), type II alveolar epithelial cells are also called *granulated pneumocytes.*

**10-Fetal Lung:** The epithelial bronchi of the entodermal pulmonary germ layer grow by *dichotomous*(equal) *division* to form the branched bronchial tree. This bronchial tree keeps on branching in the mesenchyme. The mesenchyme in the vicinity of the bronchi is conspicuously dense. Its building unit consists of a tube of columnar epithelium.At this developmental stage, the first cell aggregation that intimates the forming lung organ resembles a branched tubuloacinar gland.