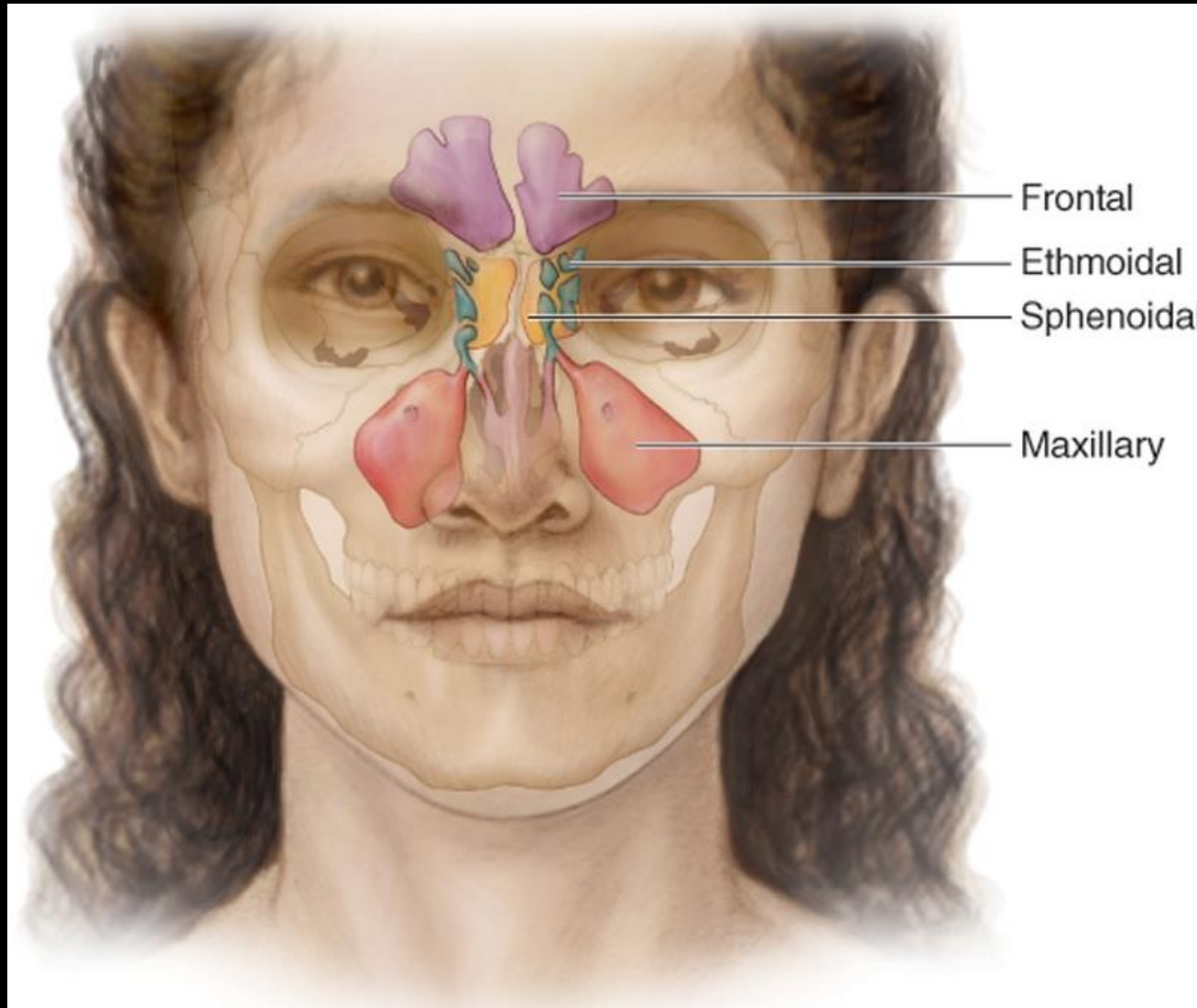


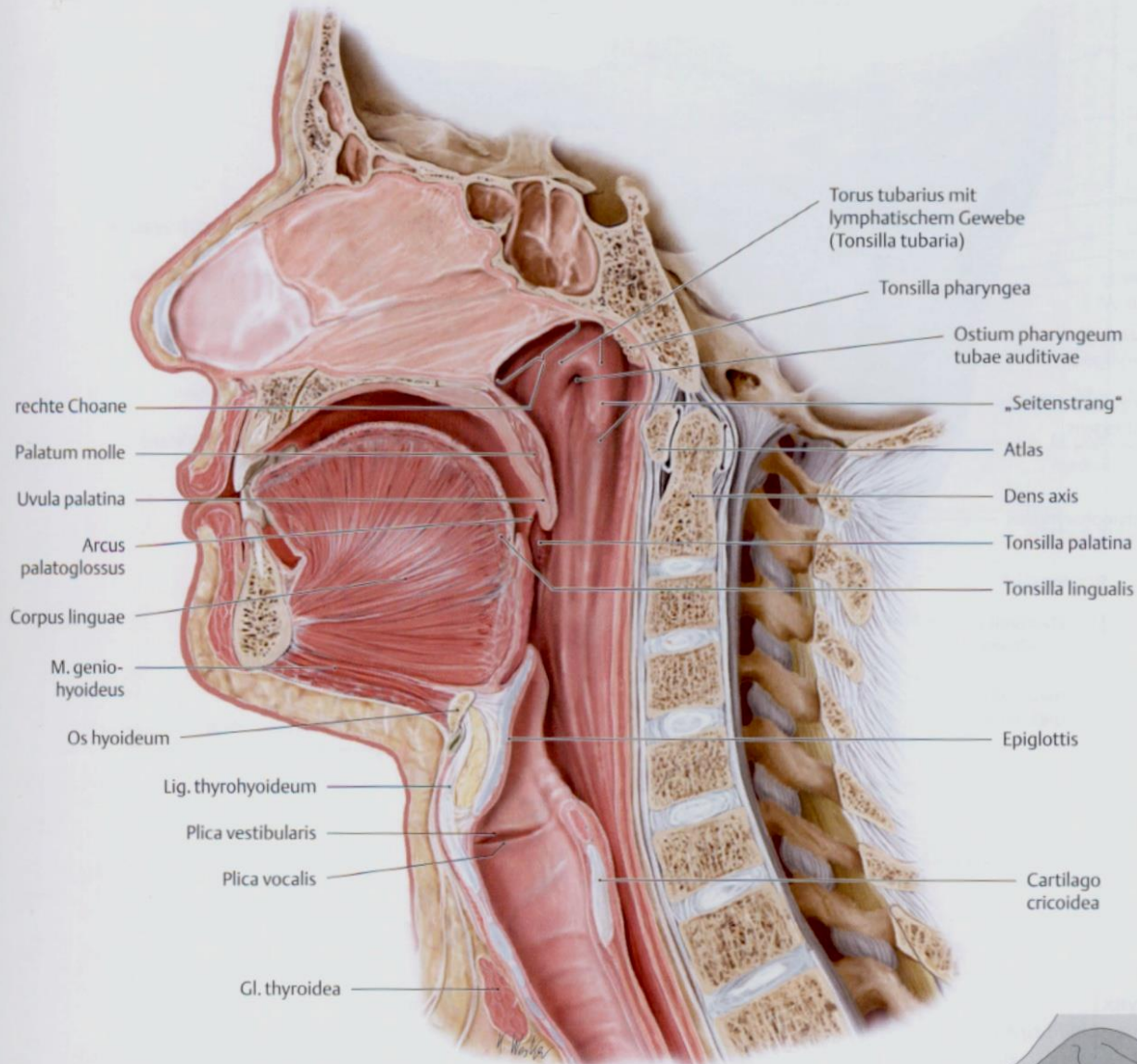
A légzőrendszer szövettana és a tüdő fejlődése

Barna János

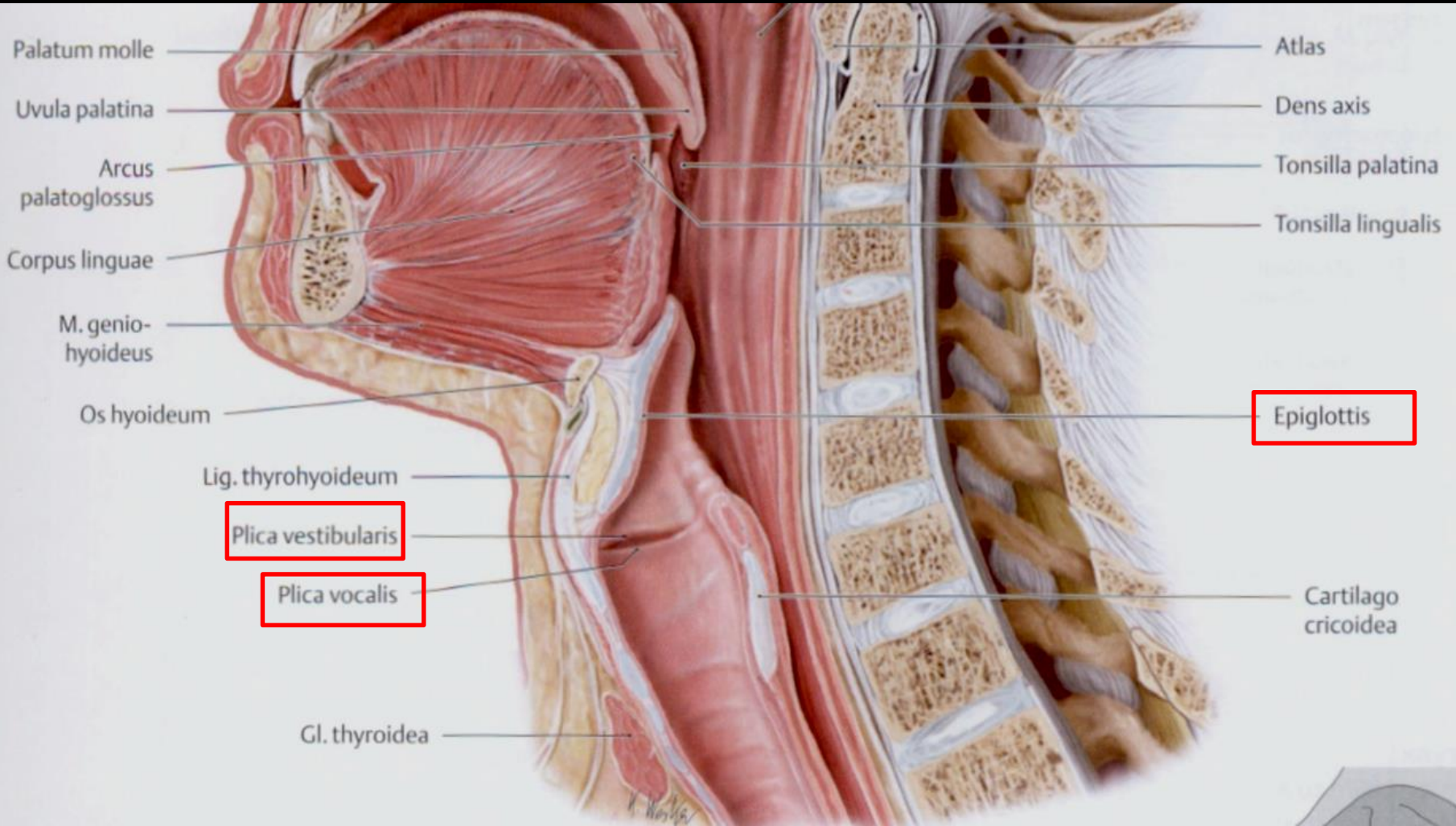
Paranasalis (ormellék) üregek



Pharynx



Larynx



Epiglottis



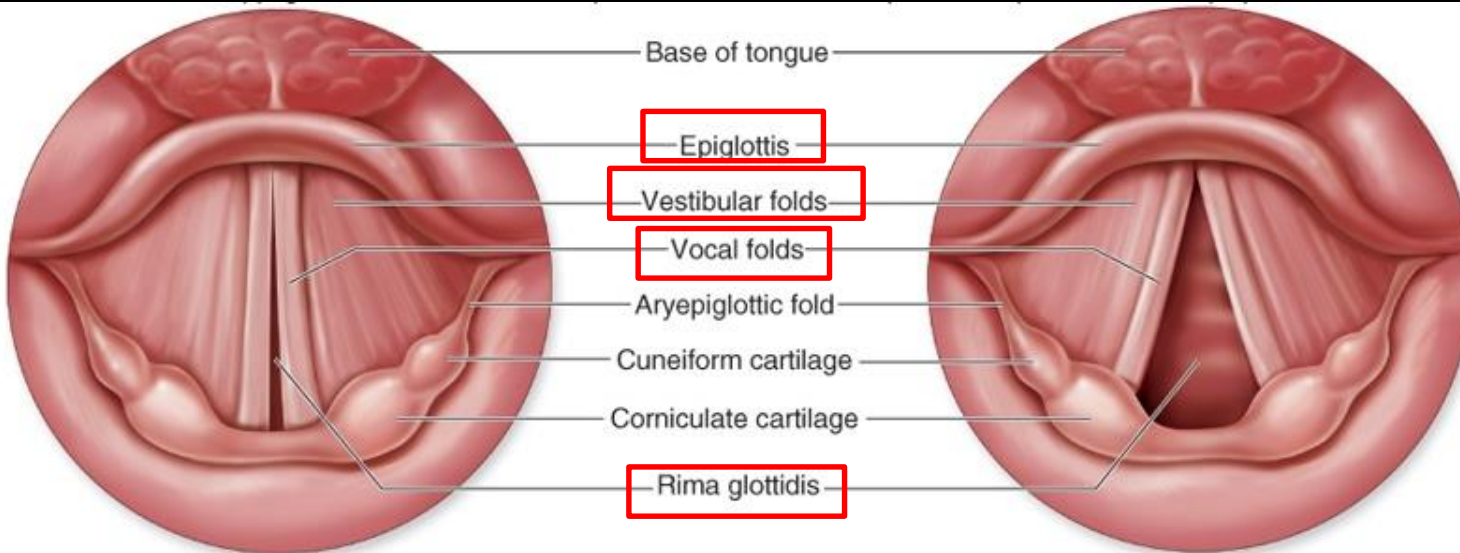
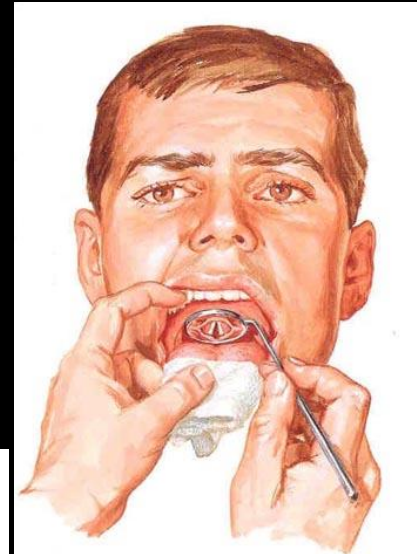


1: laryngealis felszín, 2: gl. epiglottidis, 3: cartilago epiglottidis, 4: perichondrium, 5: lingualis felszín

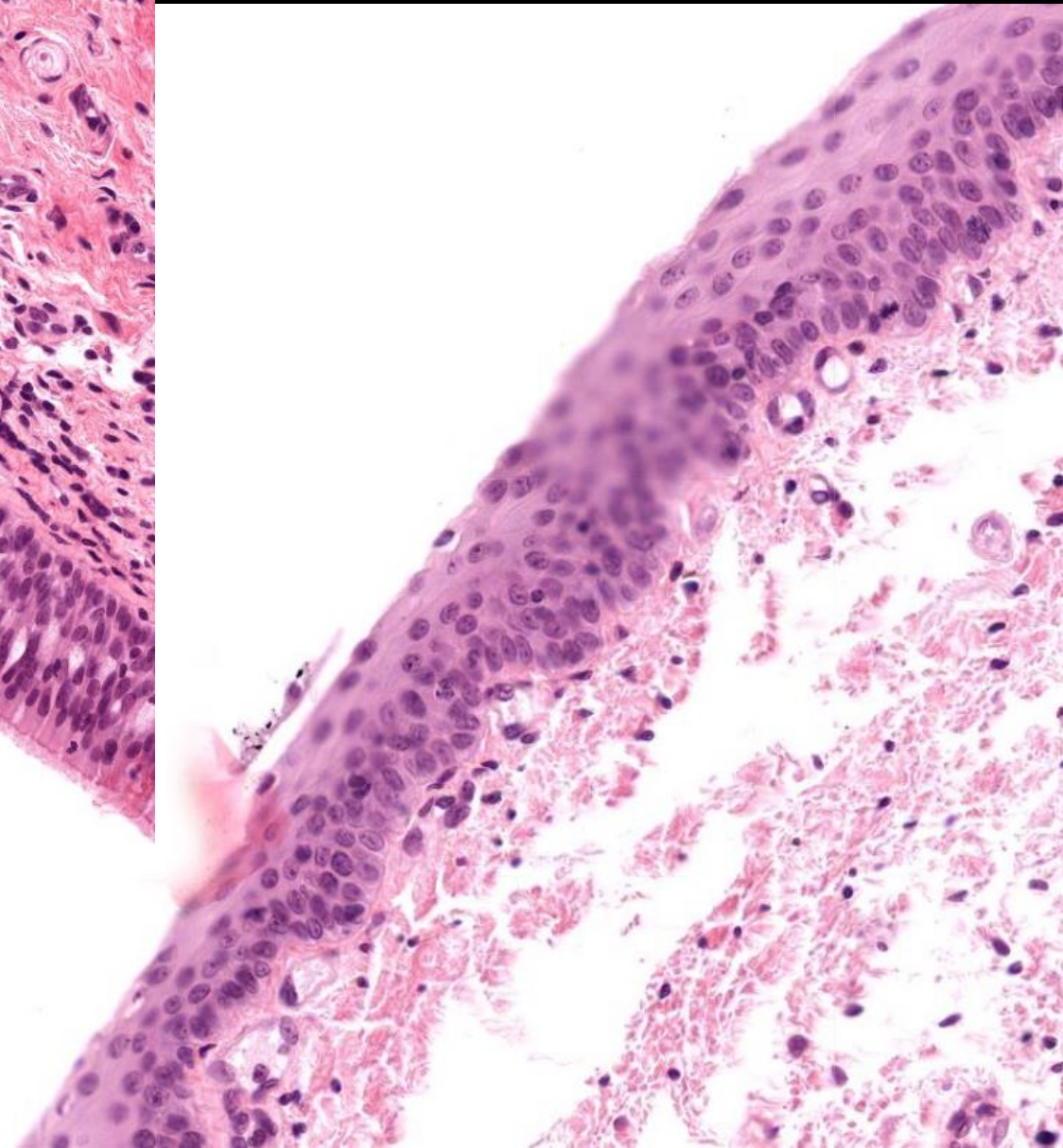
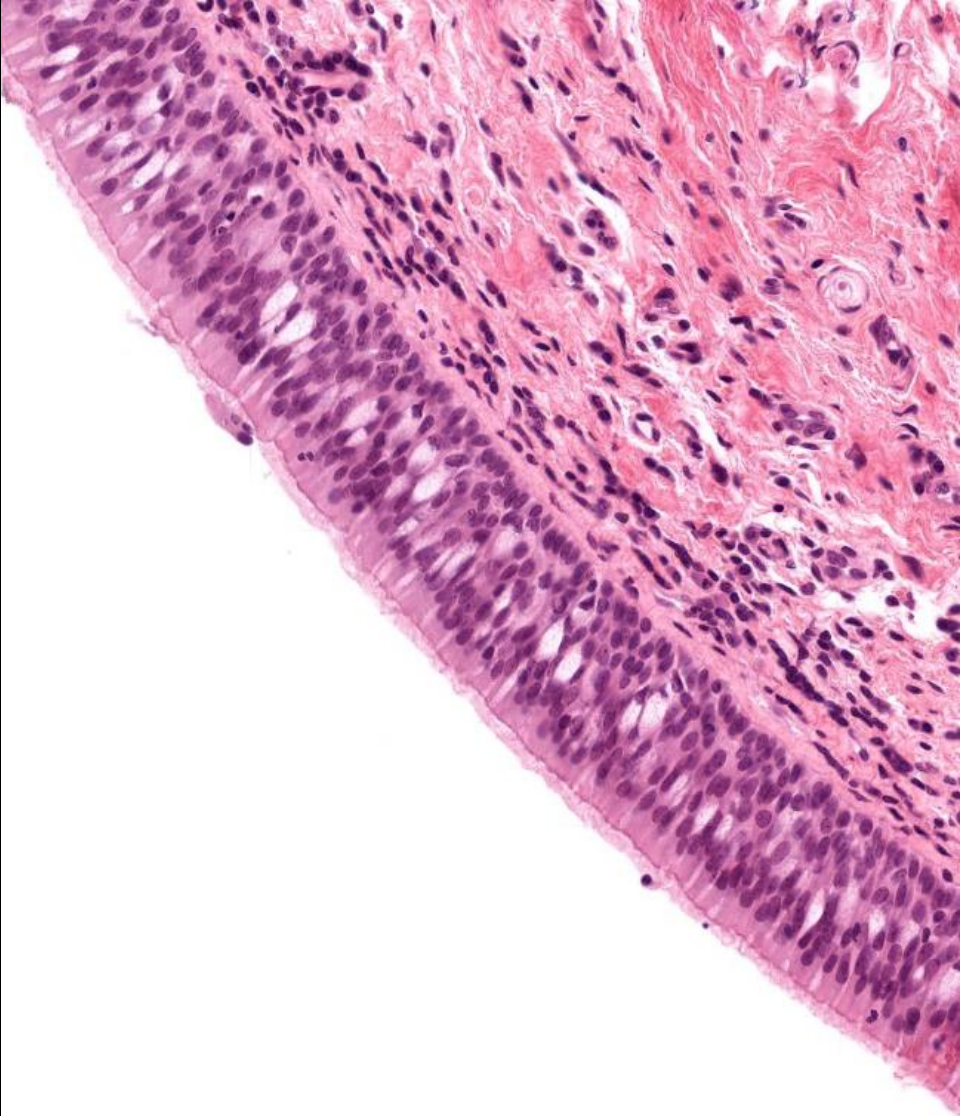
5000 μm

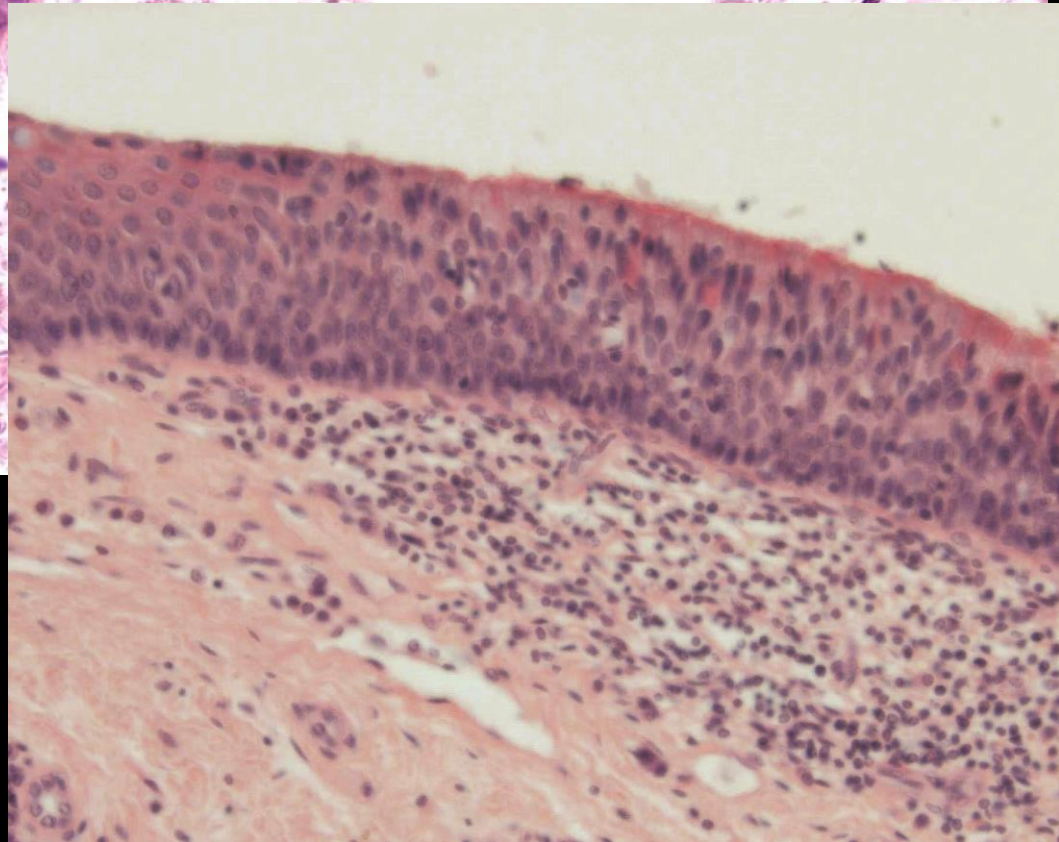
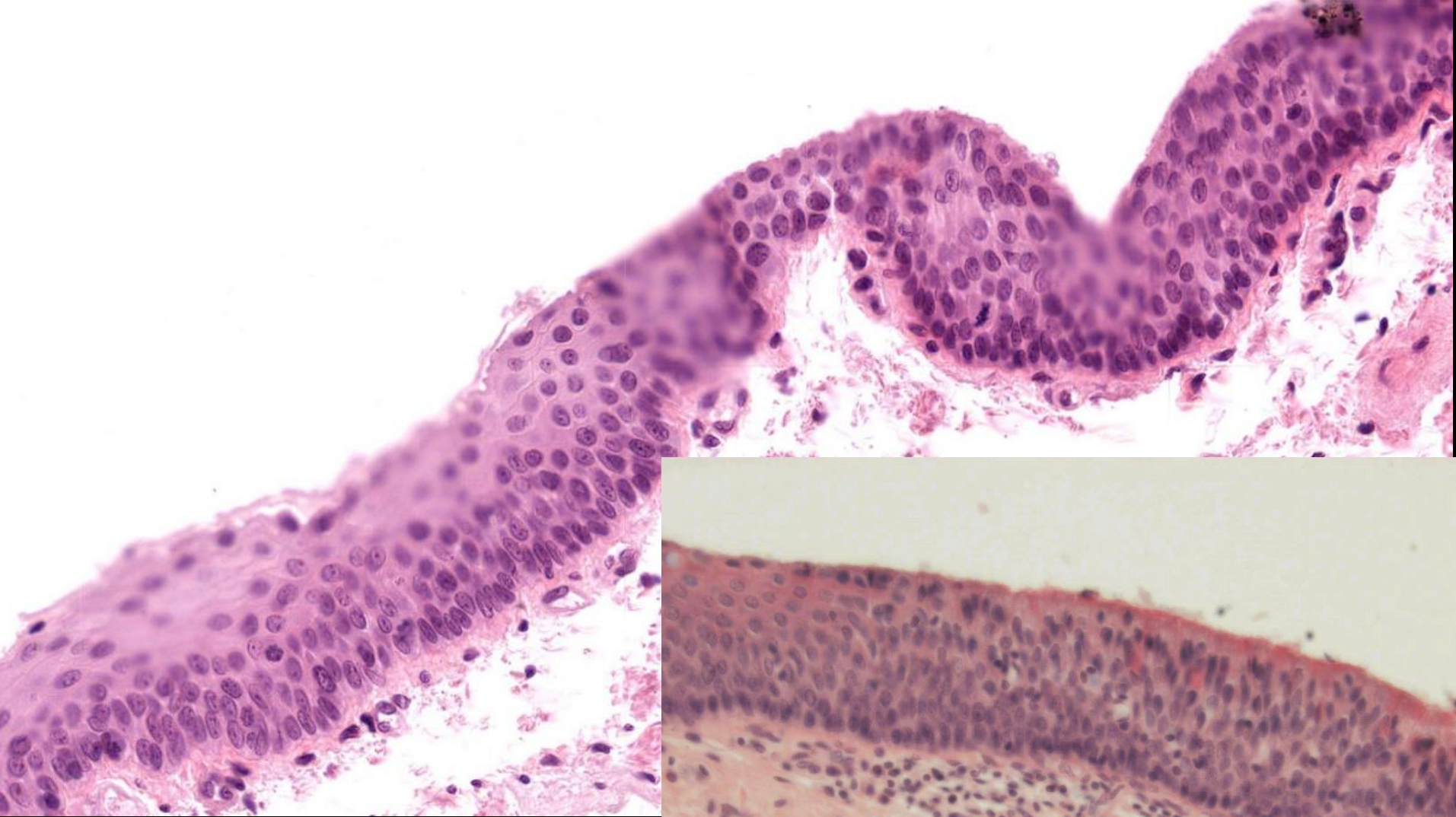


Larynx

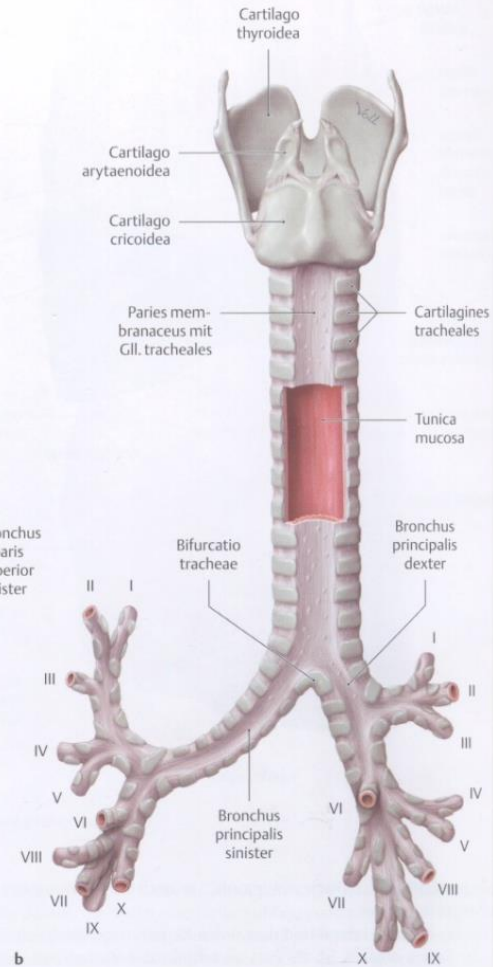
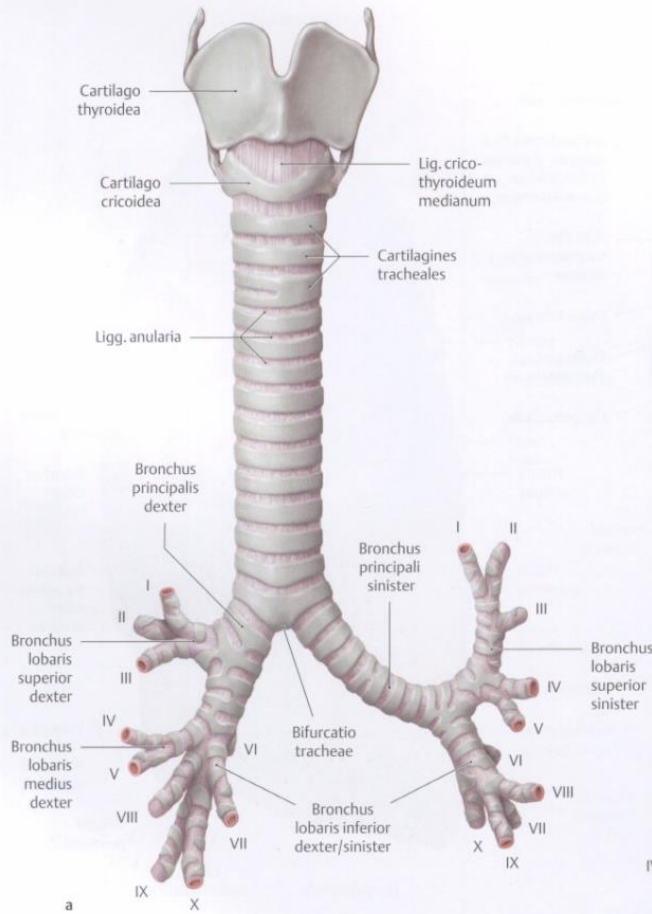


(b) Laryngoscope view



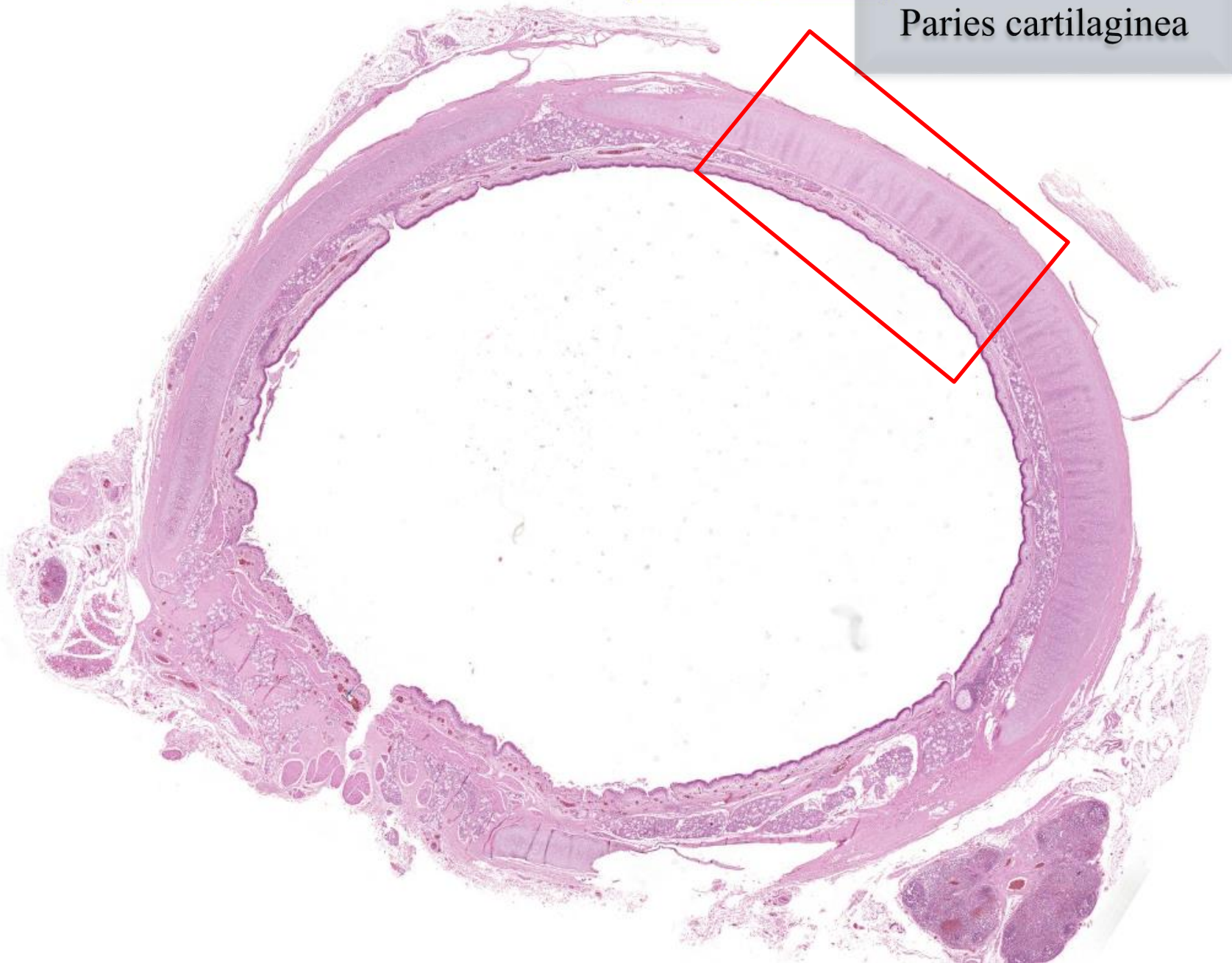


Trachea (légcső)



5000 μm

Paries cartilaginea

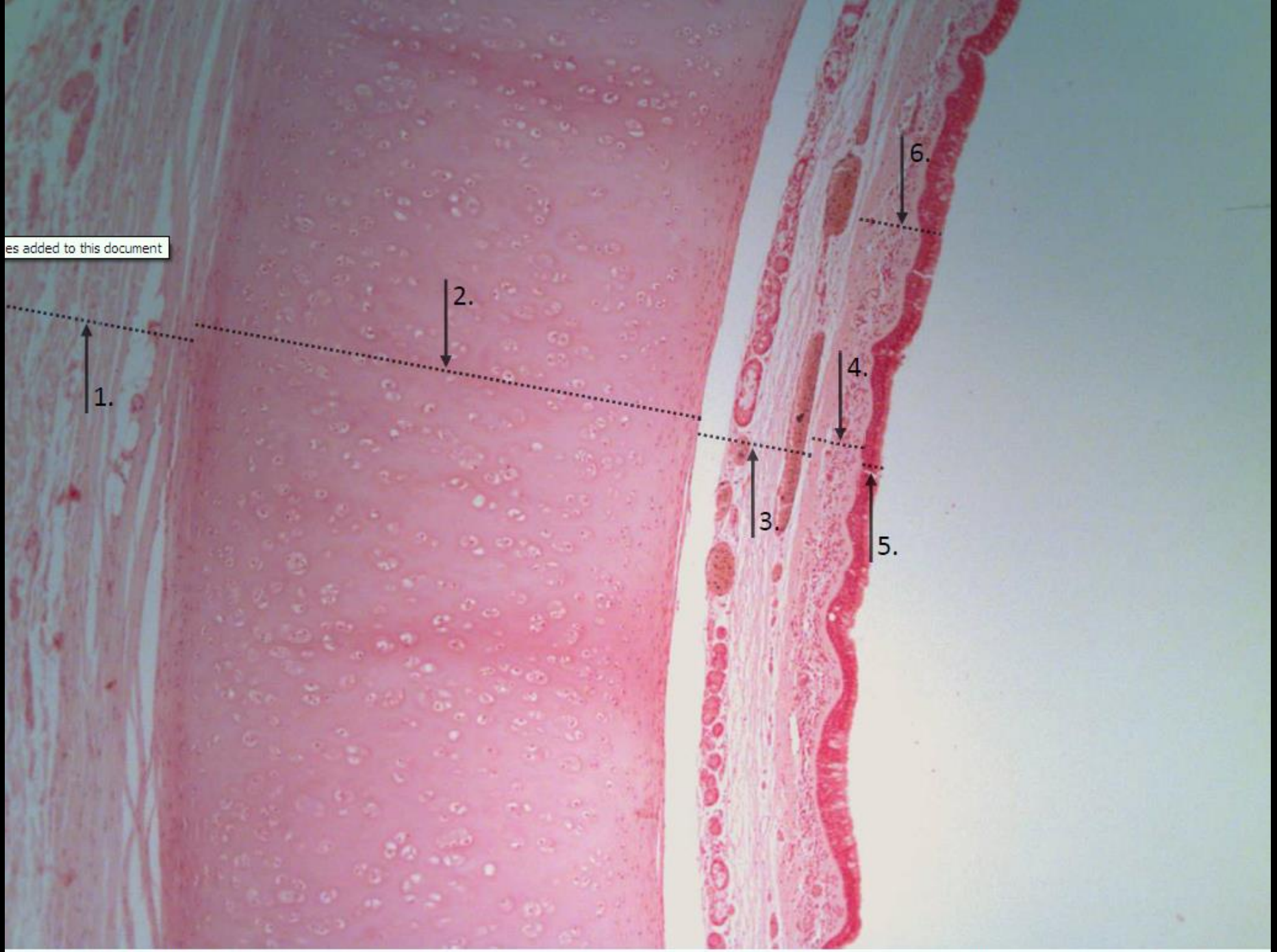


Paries cartilaginea



1: lamina epithelialis, 2: lamina propria, 3: tela submucosa, 4: tunica fibromusculocartilaginea, 5: tunica adventitia

es added to this document



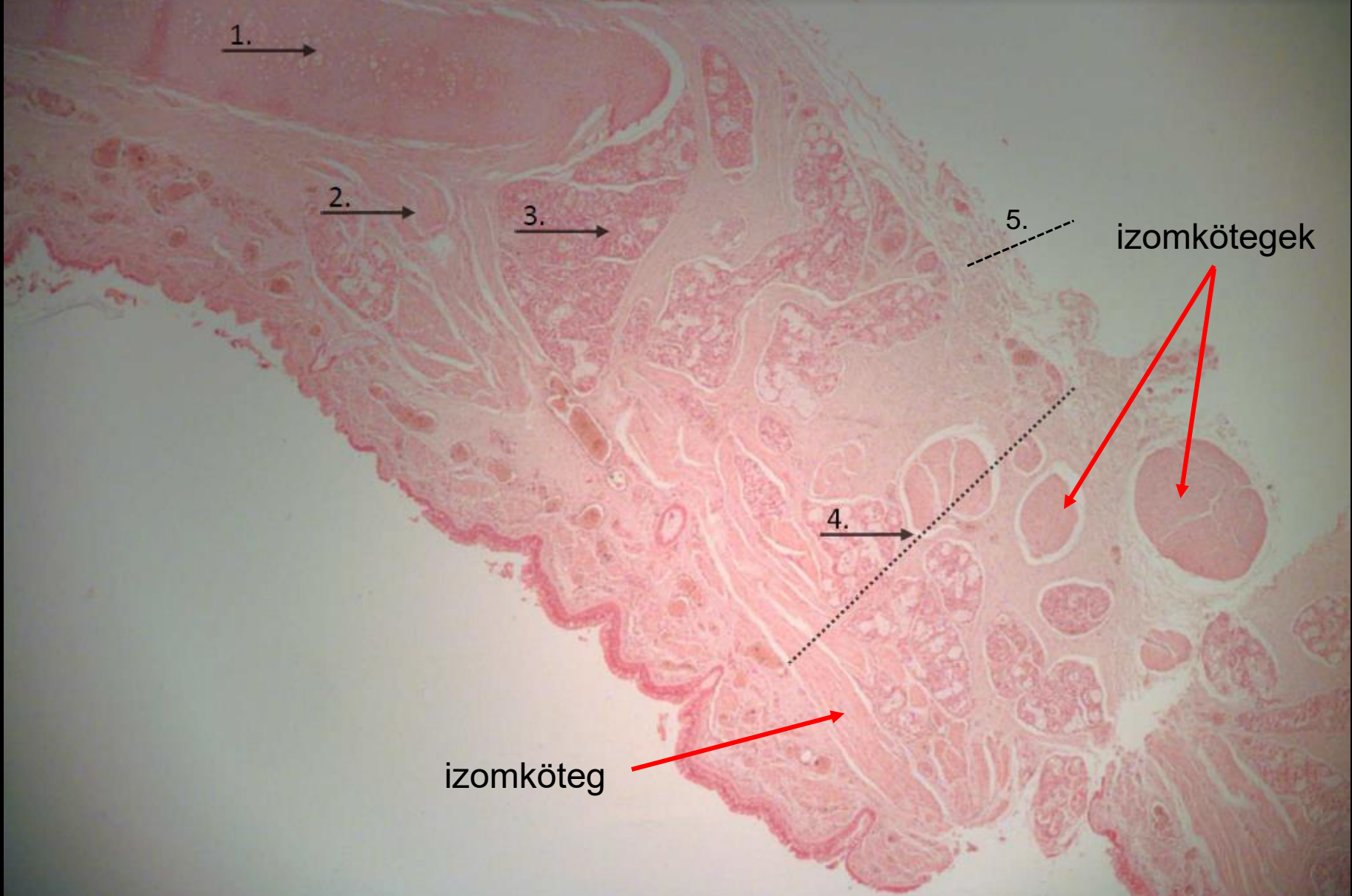
1: tunica adventitia, 2: tunica fibromusculocartilaginea, 3: tela submucosa, 4: lamina propria mucosae, 5: epithelium mucosae, 6: tunica mucosa

5000 μm



Paries membranacea

Paries membranacea



1: cartilago tracheae, 2: m. trachealis, 3: gll. tracheales, 4: tunica fibromusculocartilaginea 5: tunica adventitia



- Primary bronchi
- Secondary bronchi
- Tertiary bronchi
- Smaller bronchi



Right primary bronchus

Right secondary bronchus

Right tertiary bronchus

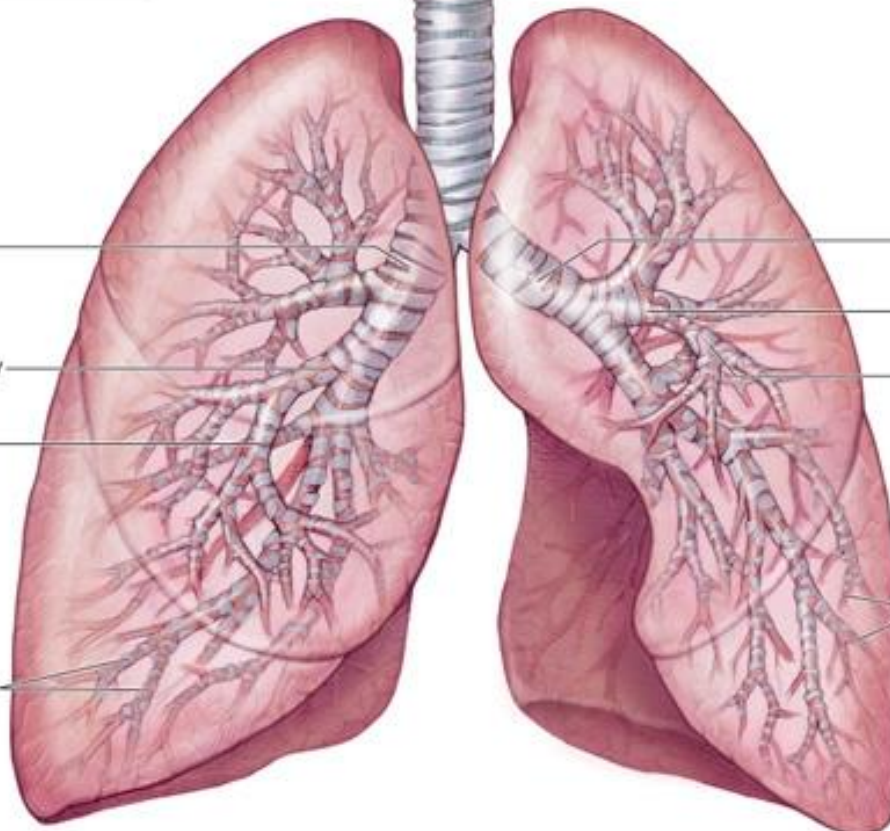
Smaller bronchi

Left primary bronchus

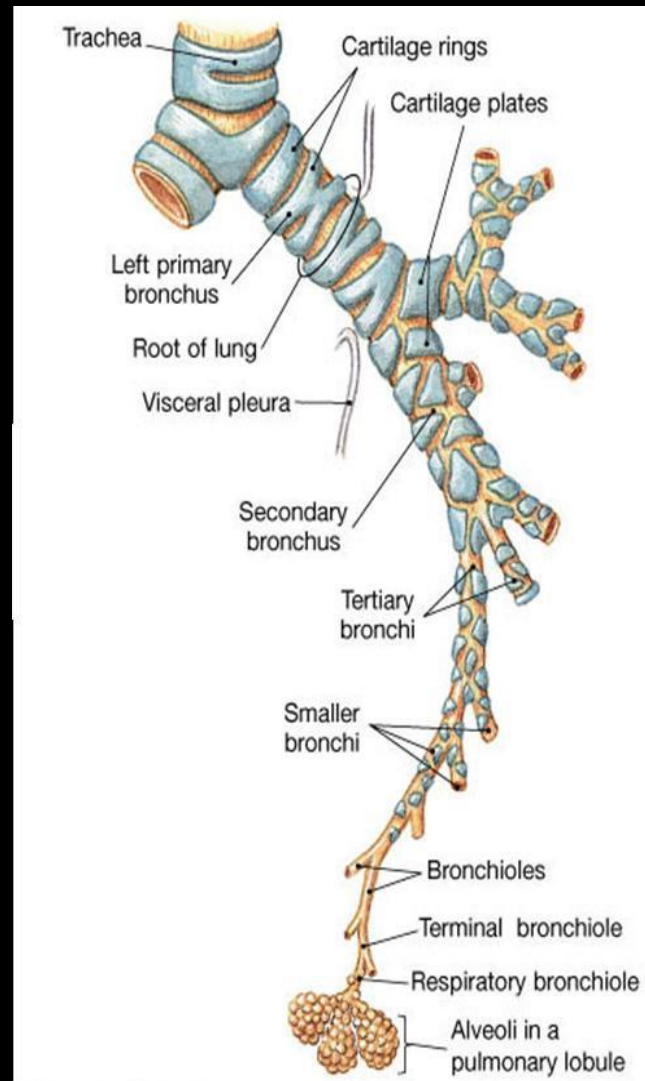
Left secondary bronchus

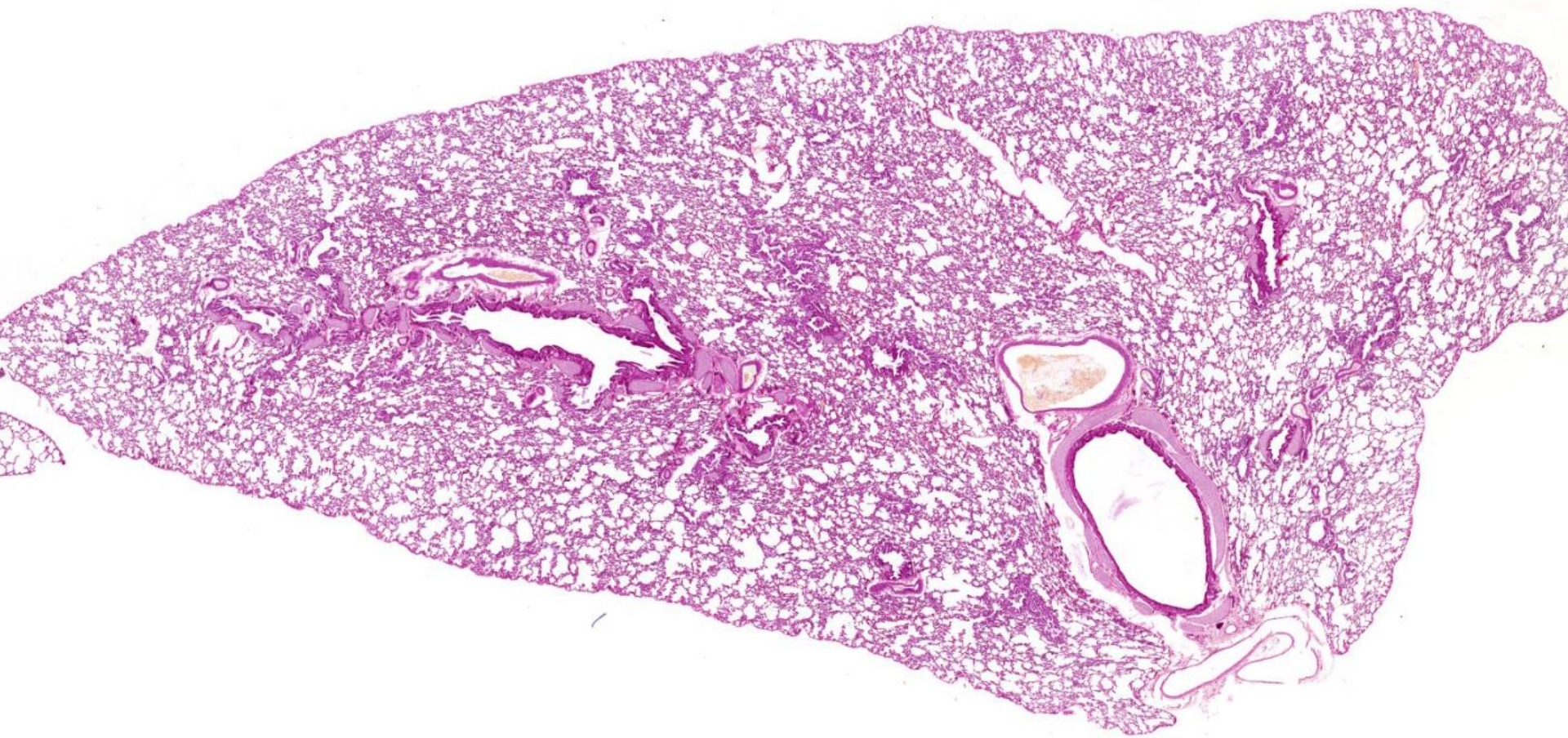
Left tertiary bronchus

Smaller bronchi



Bronchusok (hörgők) és intrapulmonális légutak

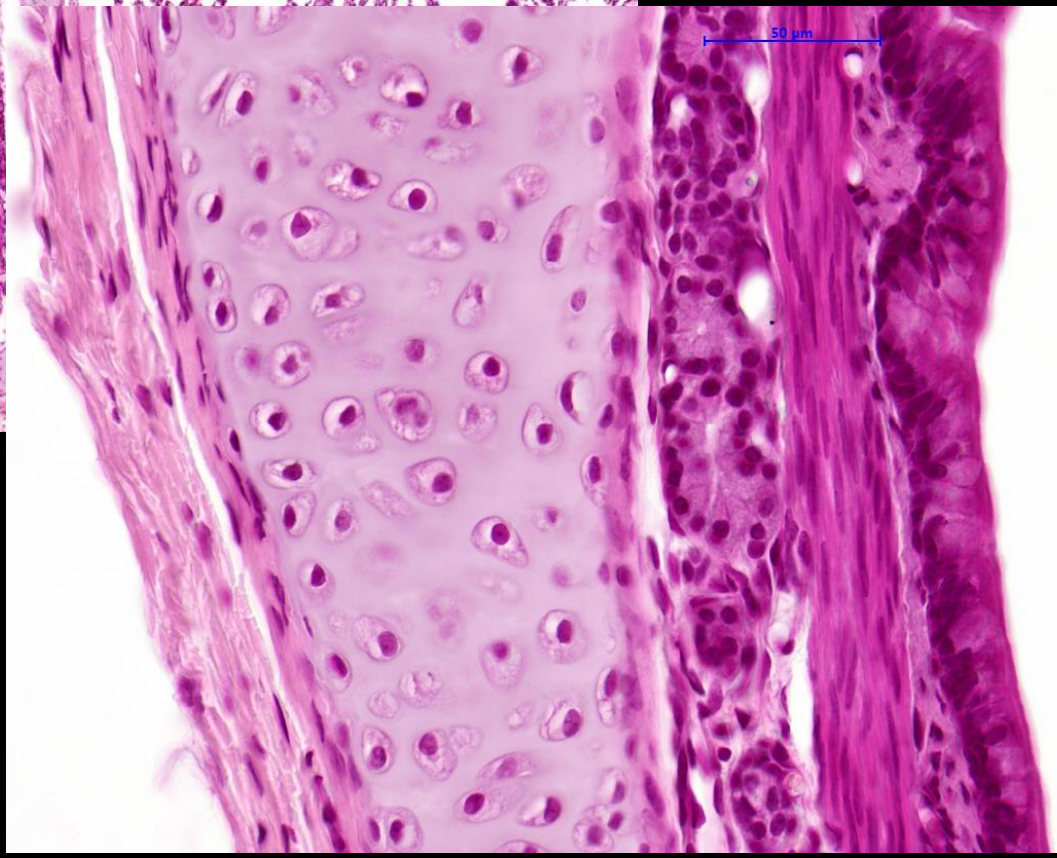
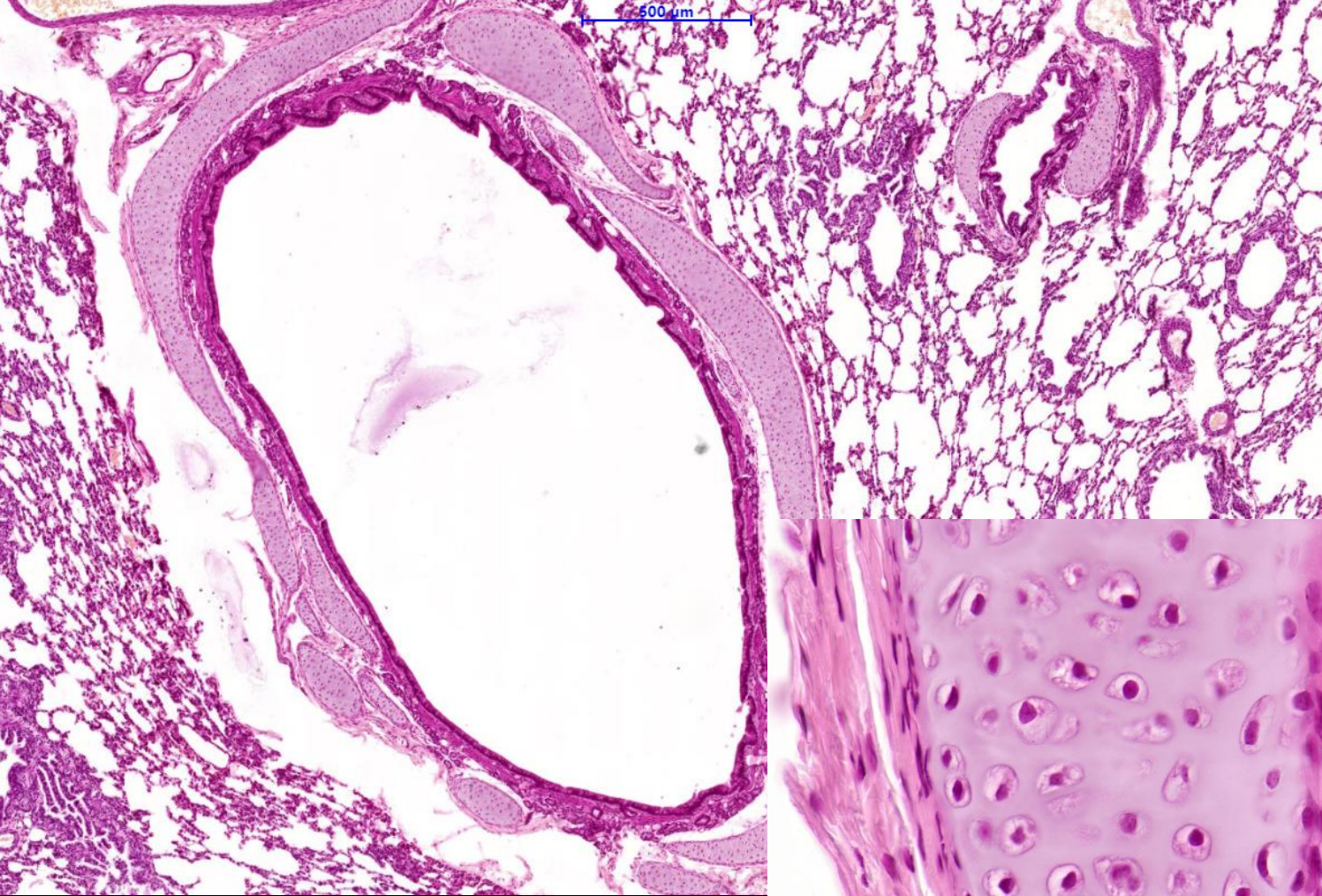


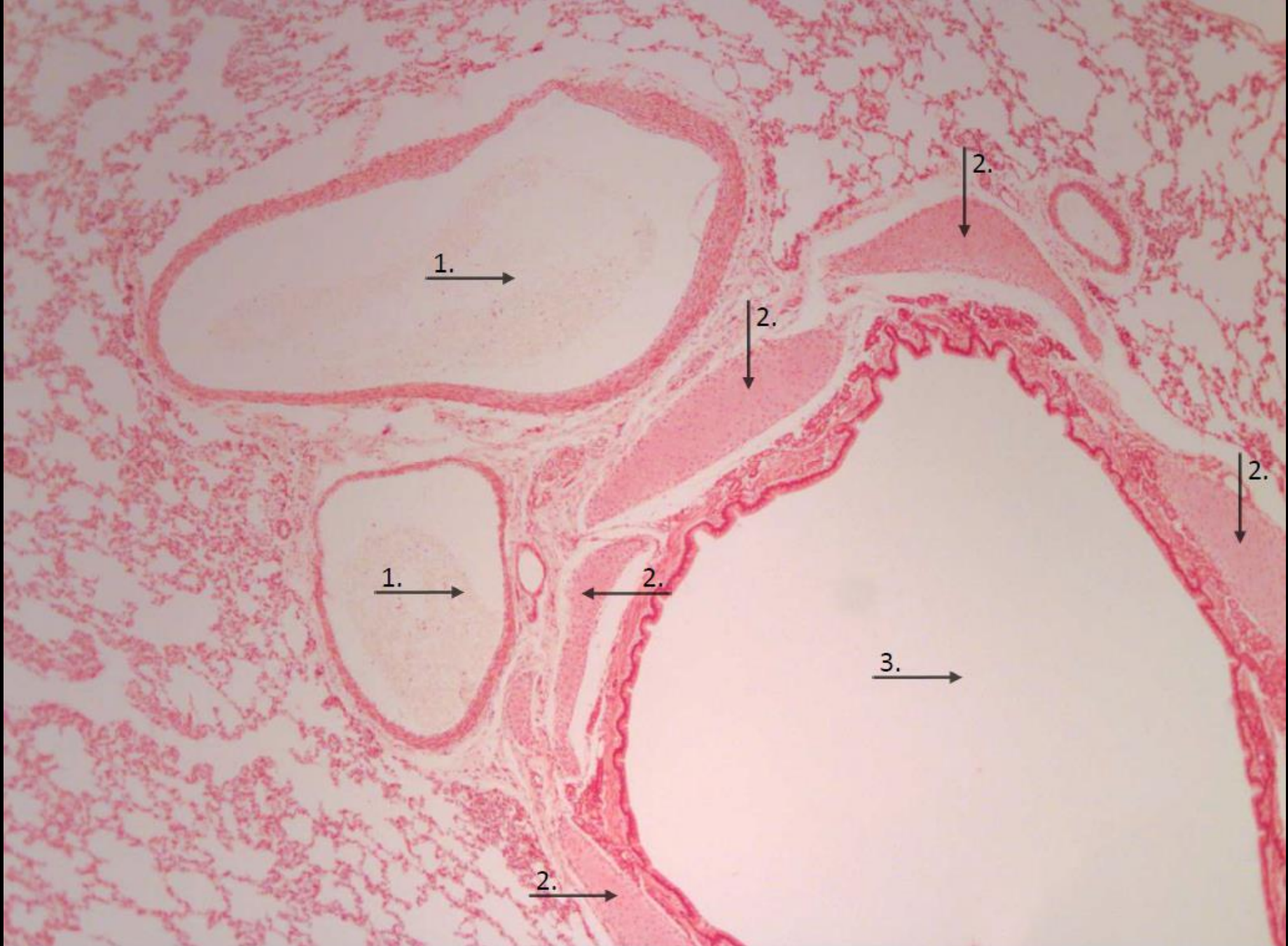


Bronchus

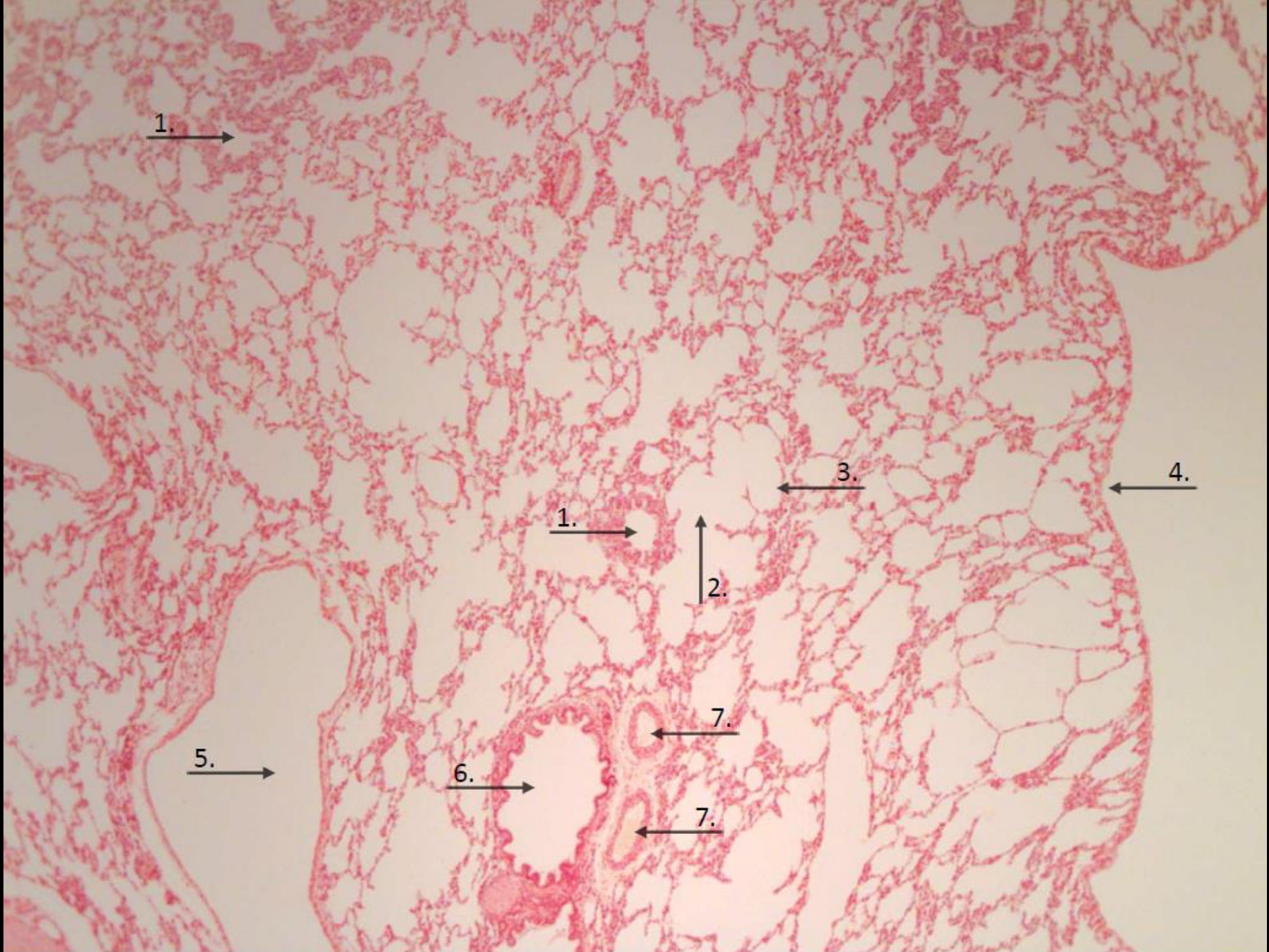


15-4. ábra. Tüdőrészlet bronchussal és bronchiolusokkal (100 x)



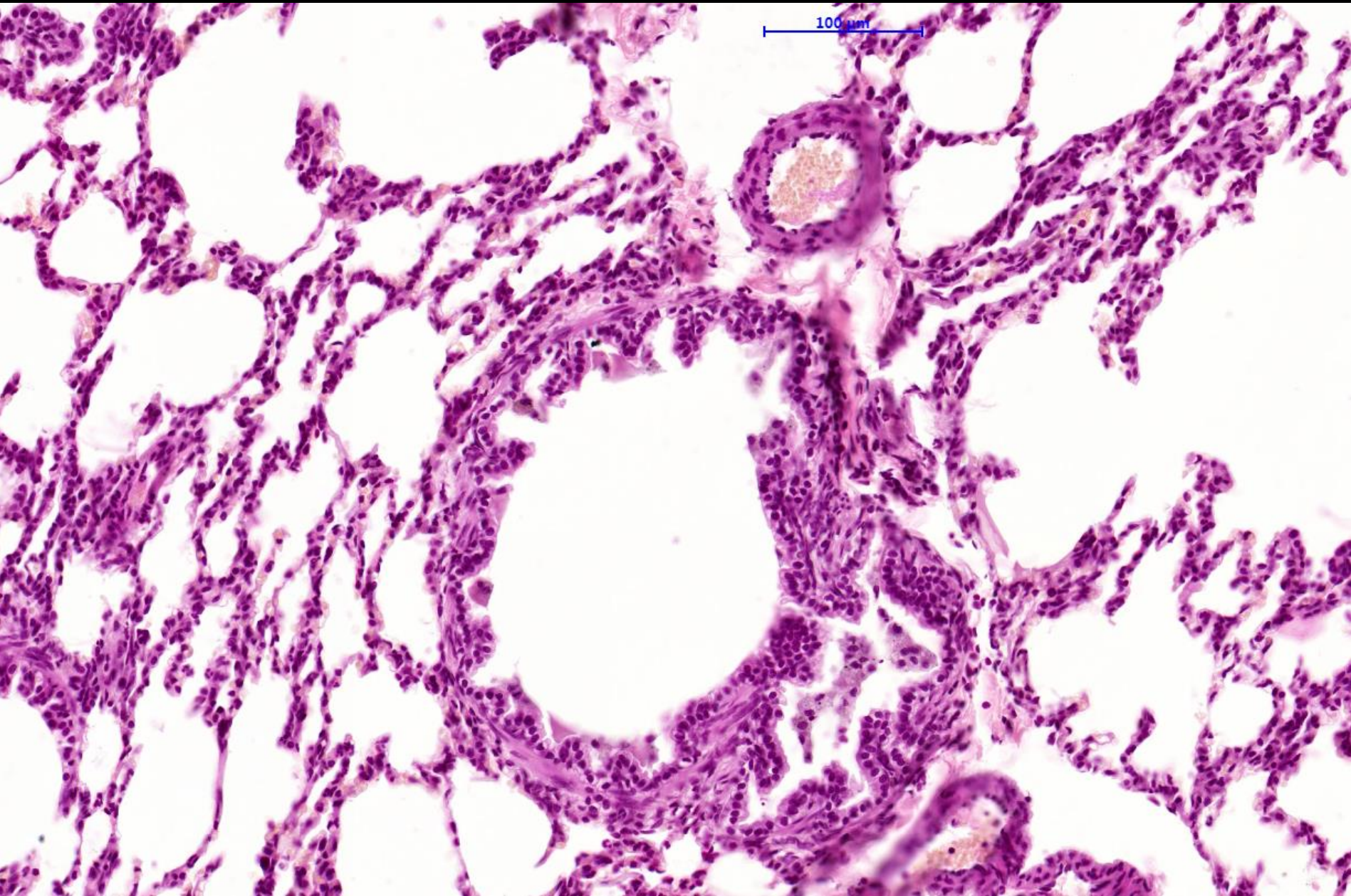


1: arteriák (a. pulmonalis / bronchialis), 2: cartilago bronchi, 3: bronchus lumene

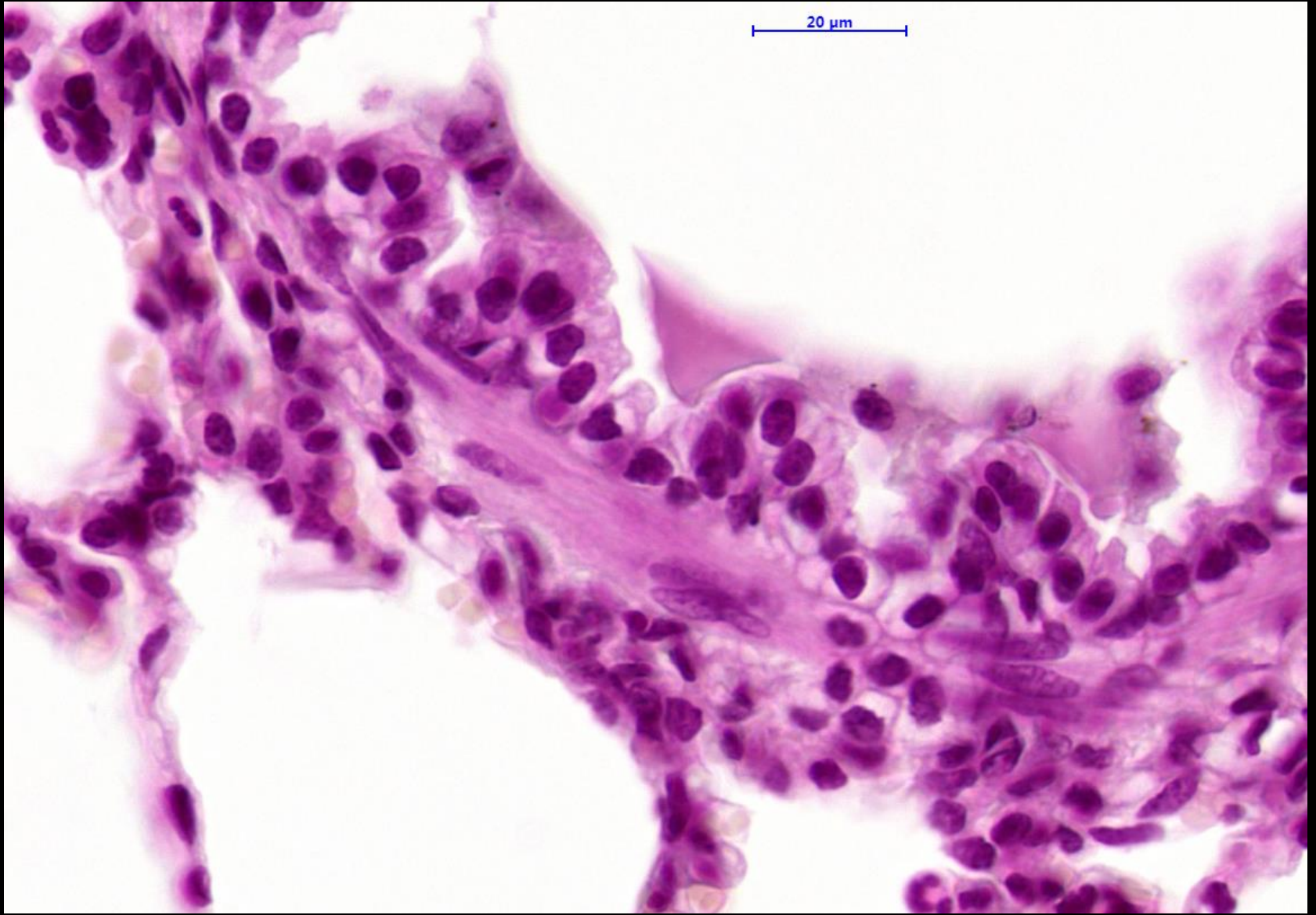


1: bronchiolus, 2: ductus alveolaris, 3: alveolus, 4: pleura visceralis, 5: v. pulmonalis, 6: bronchus, 7: aa. bronchiales

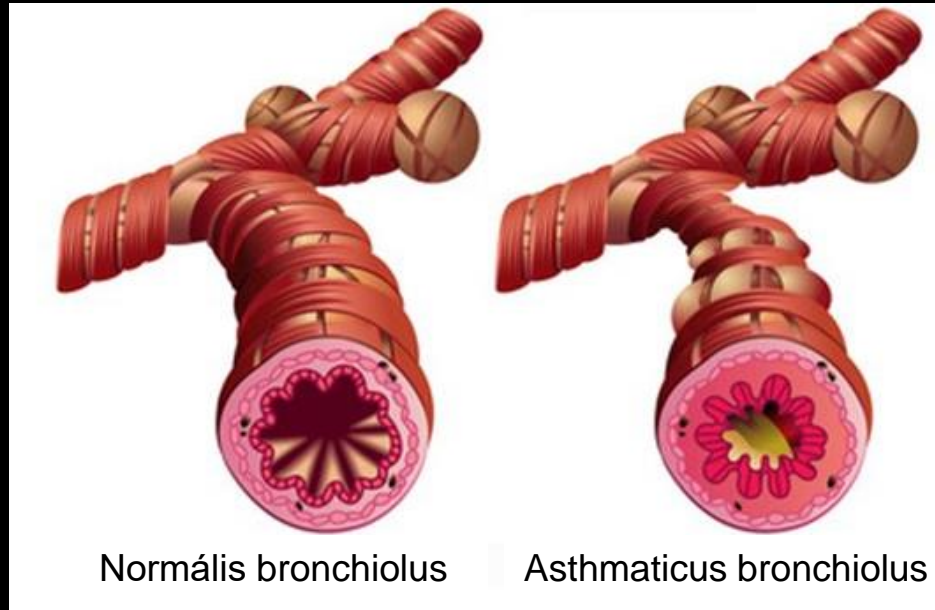
Bronchiolus

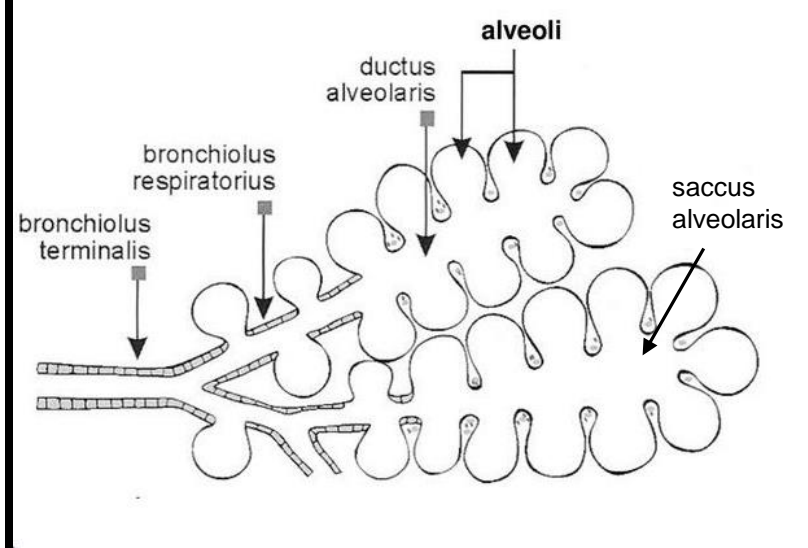
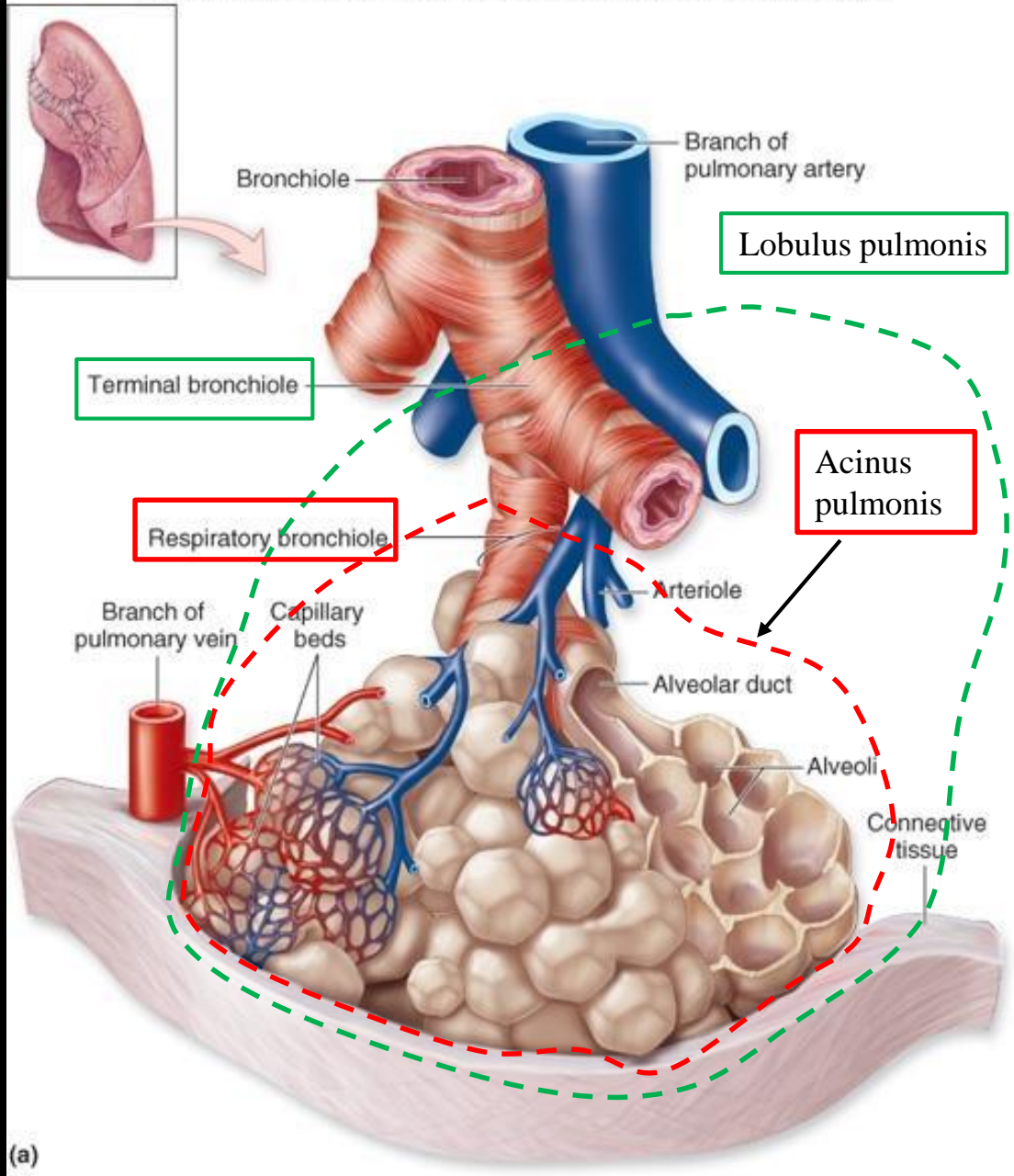


20 μm

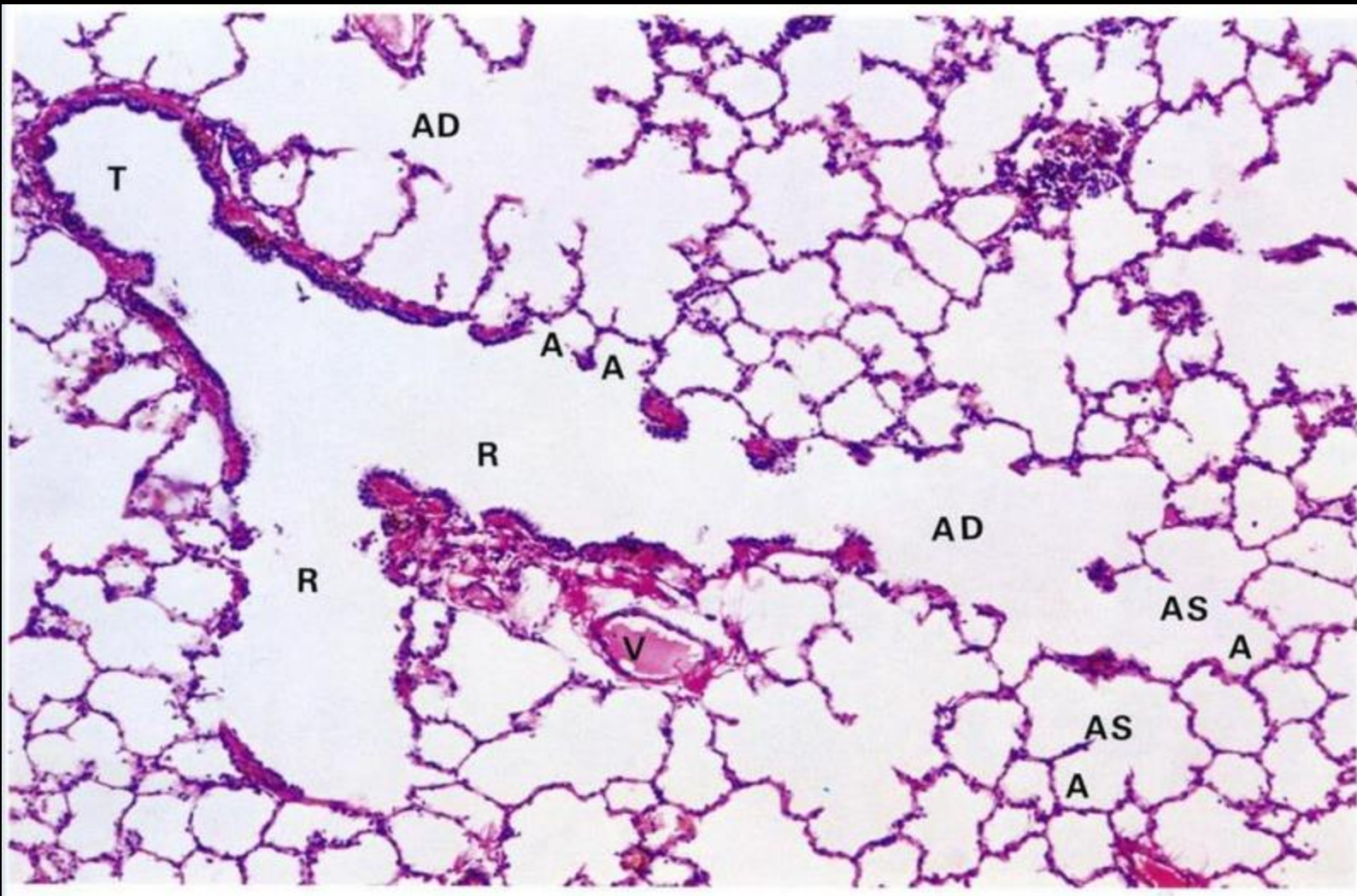


Asthma bronchiale



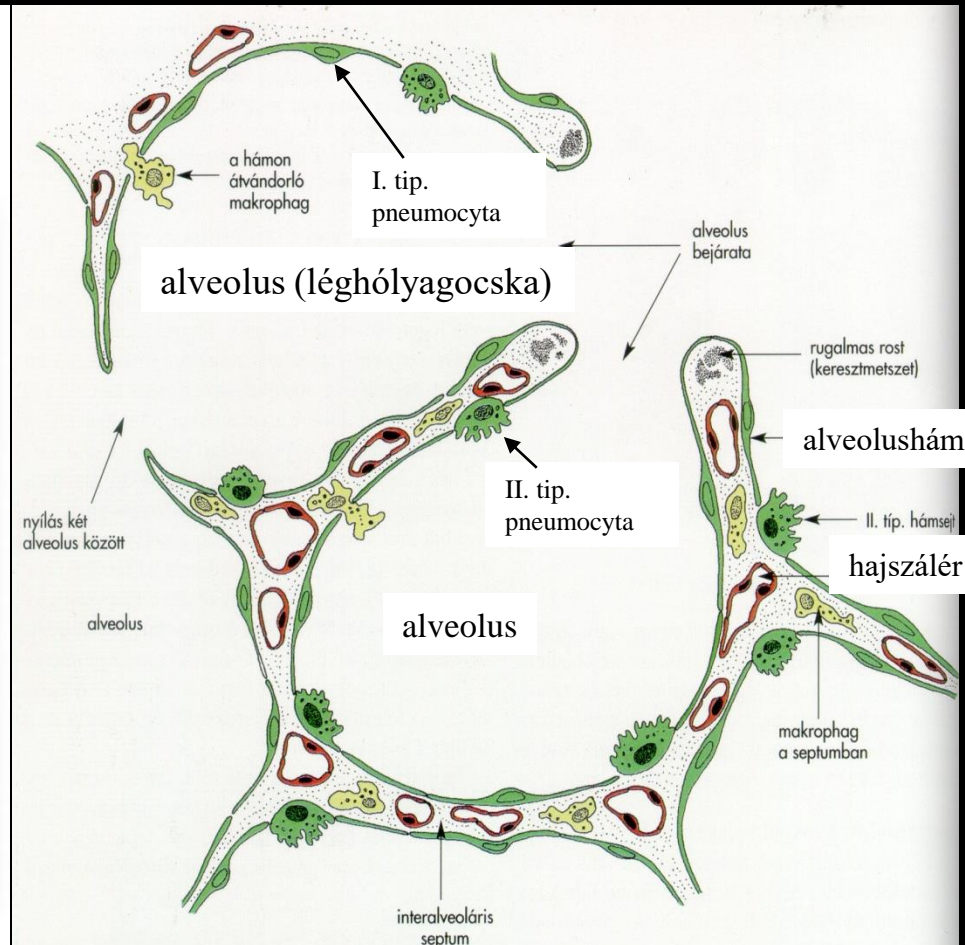
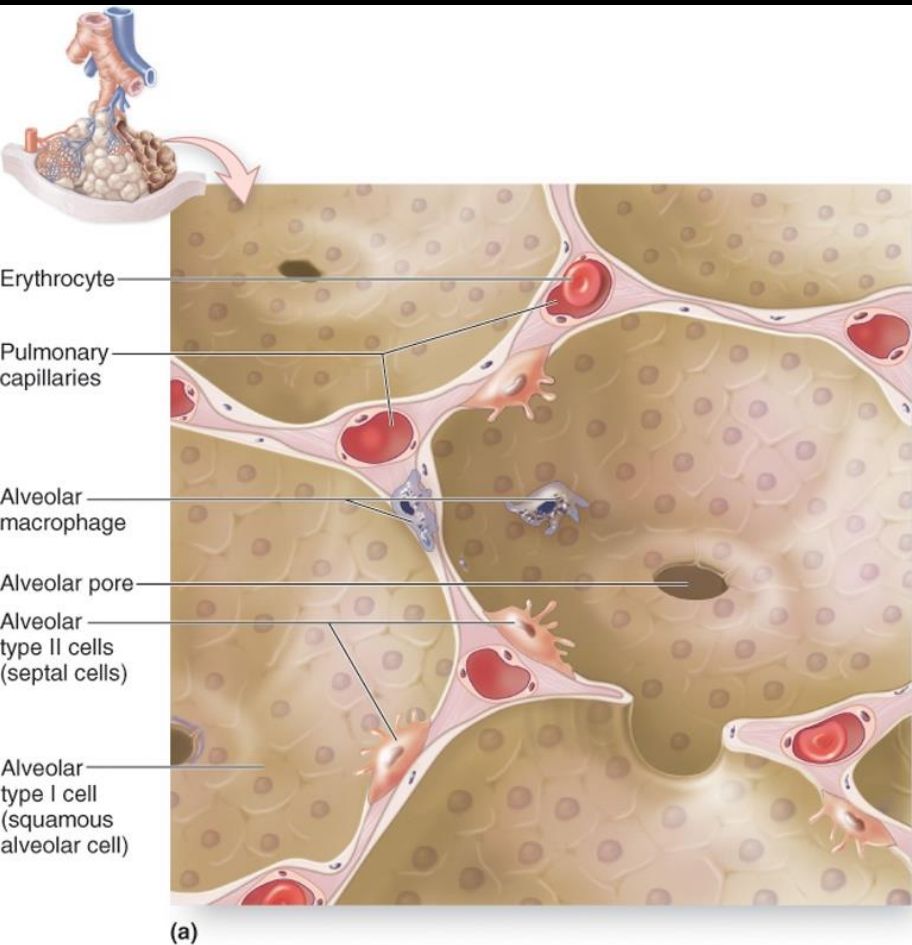


(a)

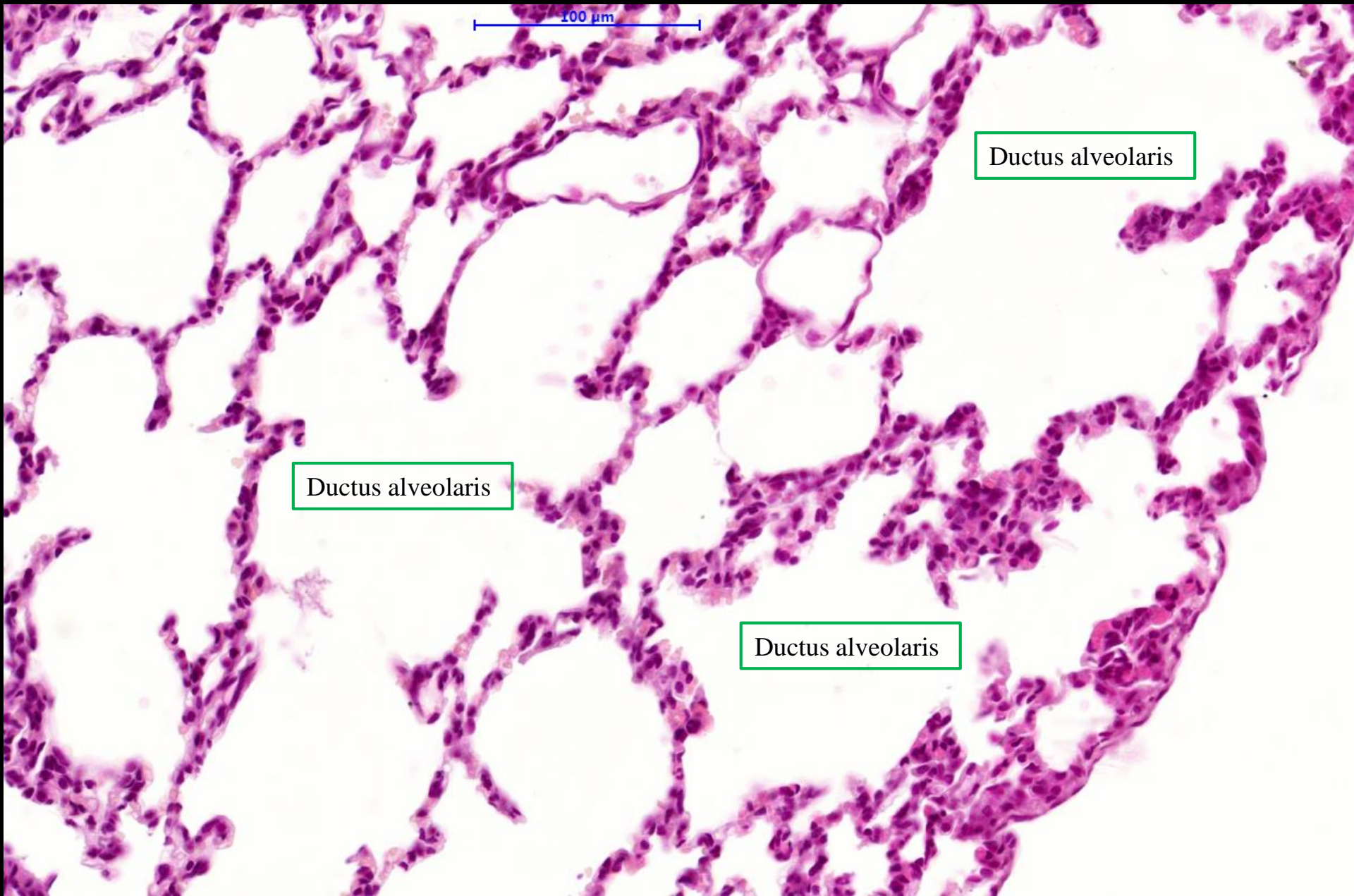


T: bronchiolus terminalis, R: bronchiolus respiratorius, AD: ductus alveolaris, AS: saccus alveolaris, A: alveolus, V: véna bronchialis

Alveolusok



15-8. ábra. Az alveolusok és az interalveoláris septumok

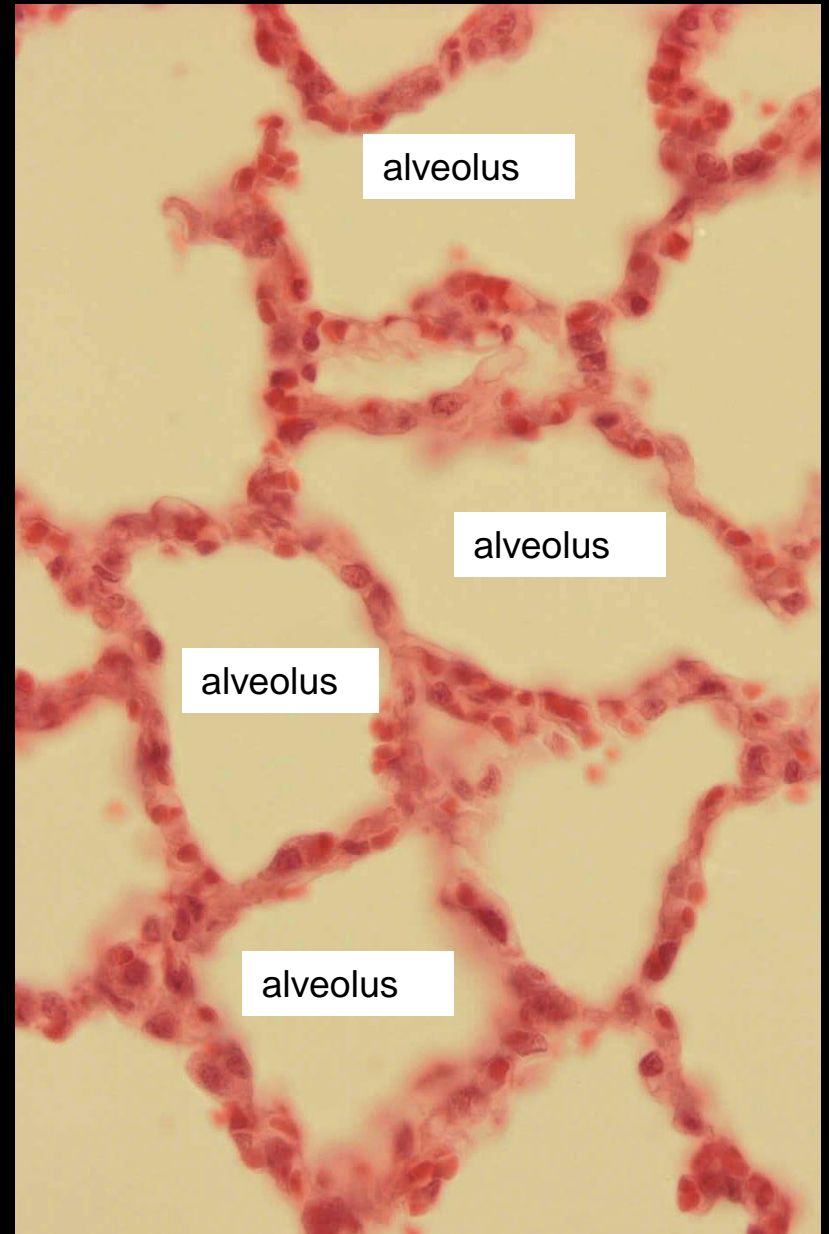
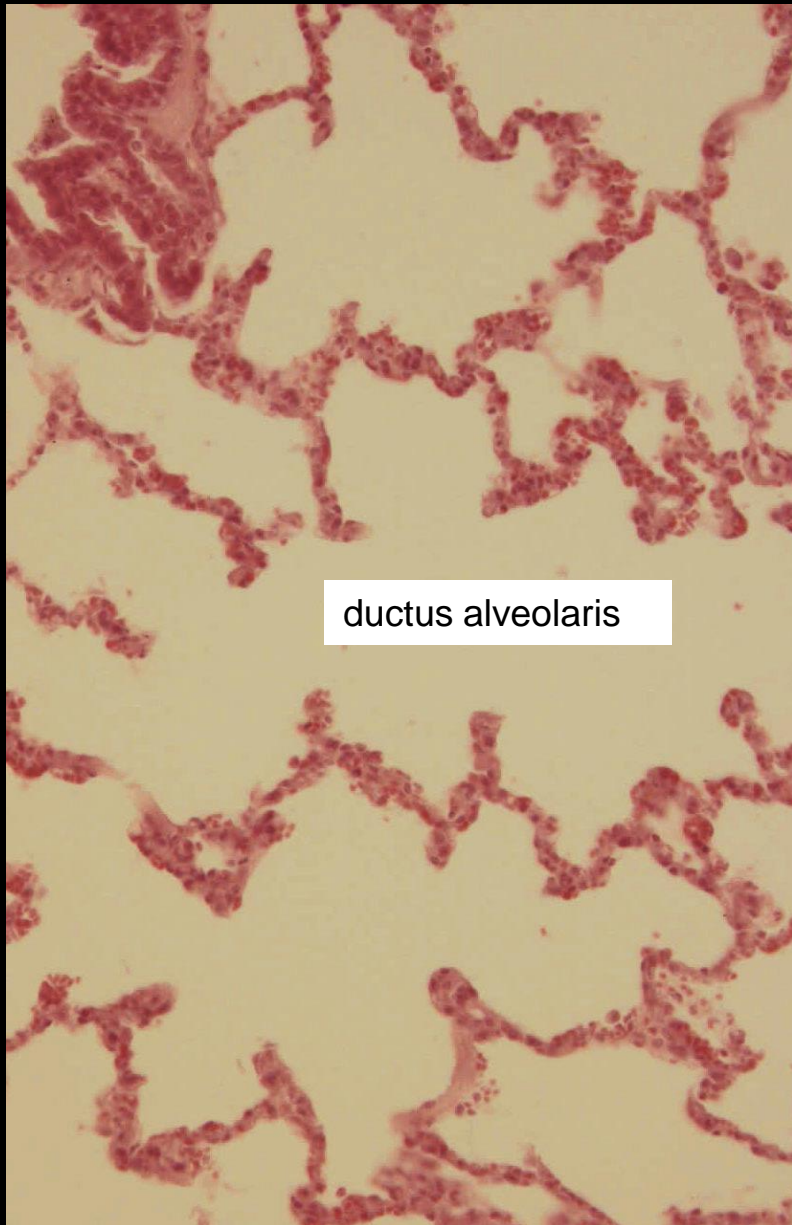


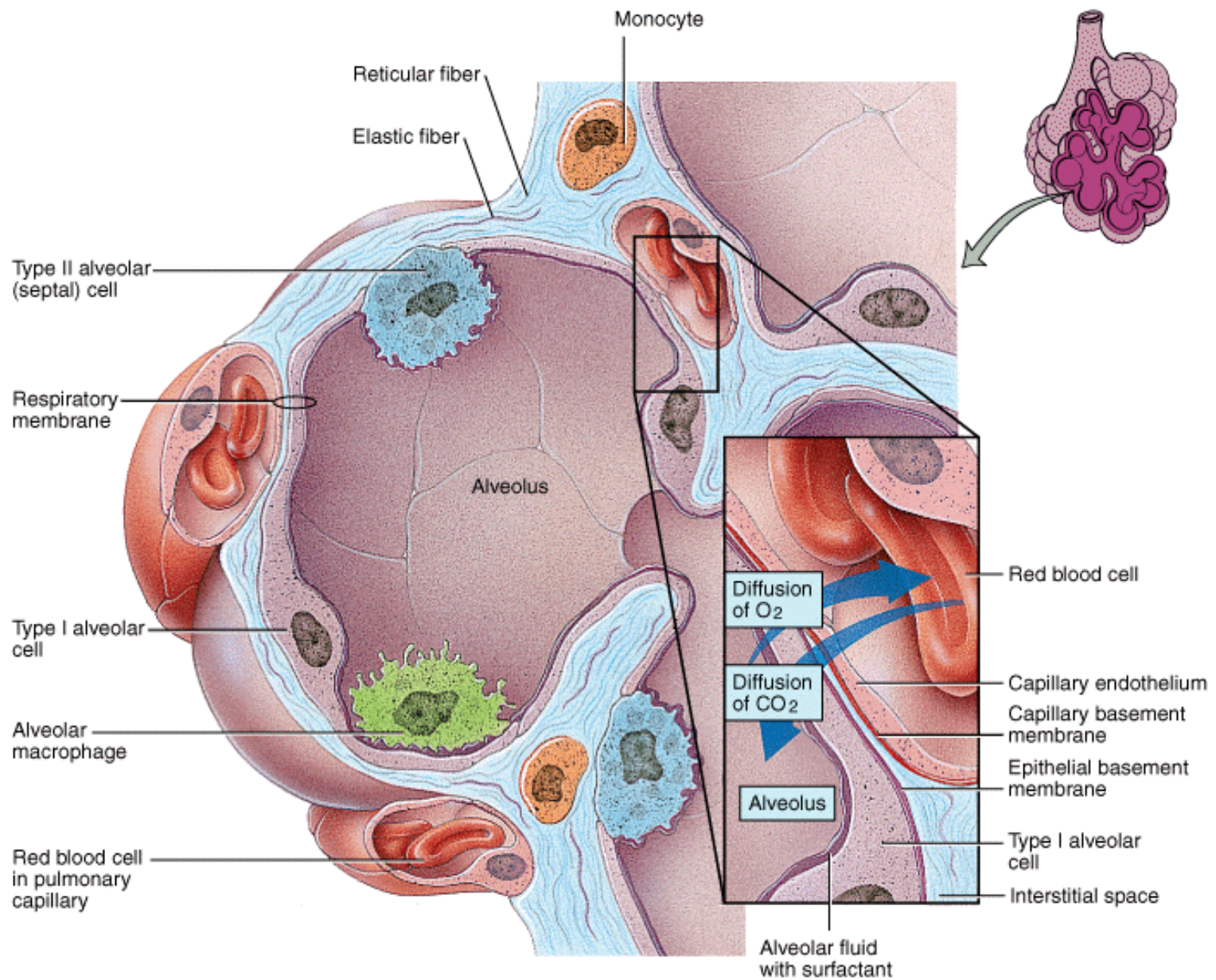
100 μ m

Ductus alveolaris

Ductus alveolaris

Ductus alveolaris

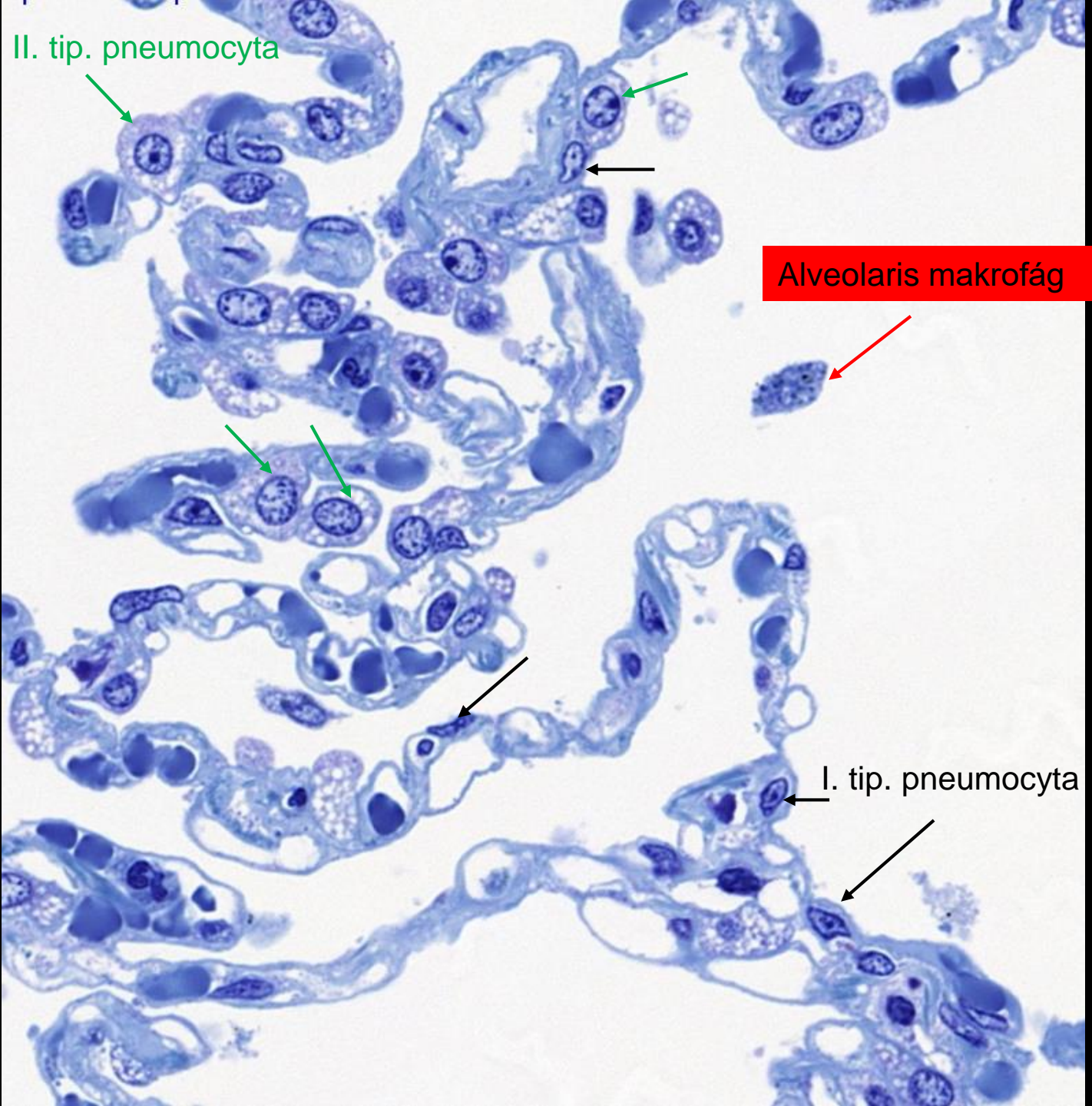




(a) Section through an alveolus showing its cellular components

(b) Details of respiratory membrane

II. tip. pneumocyta



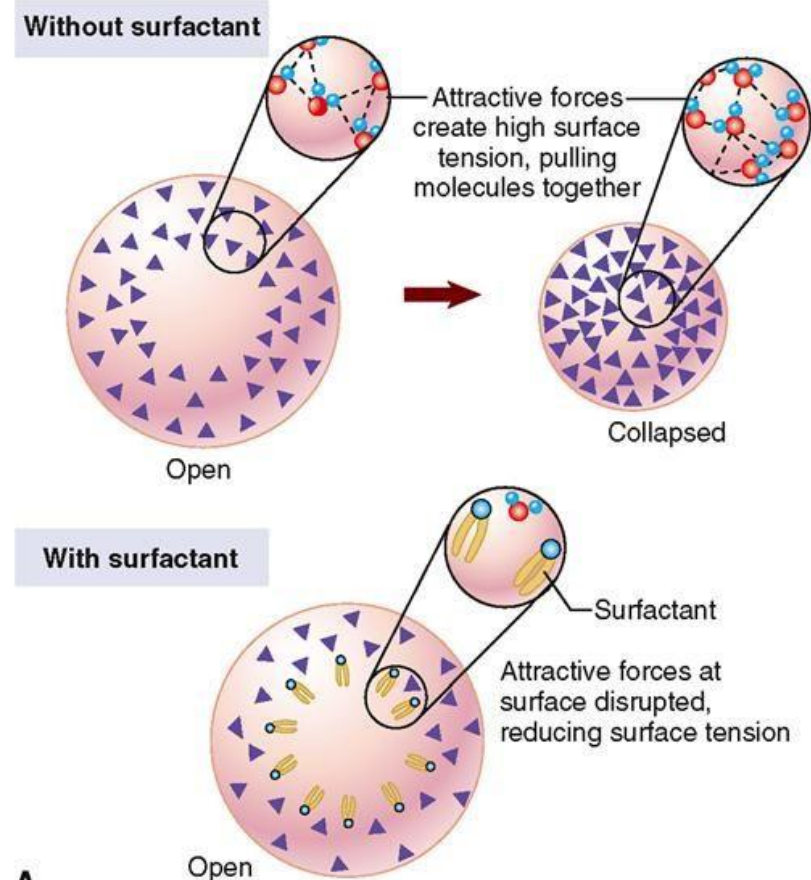
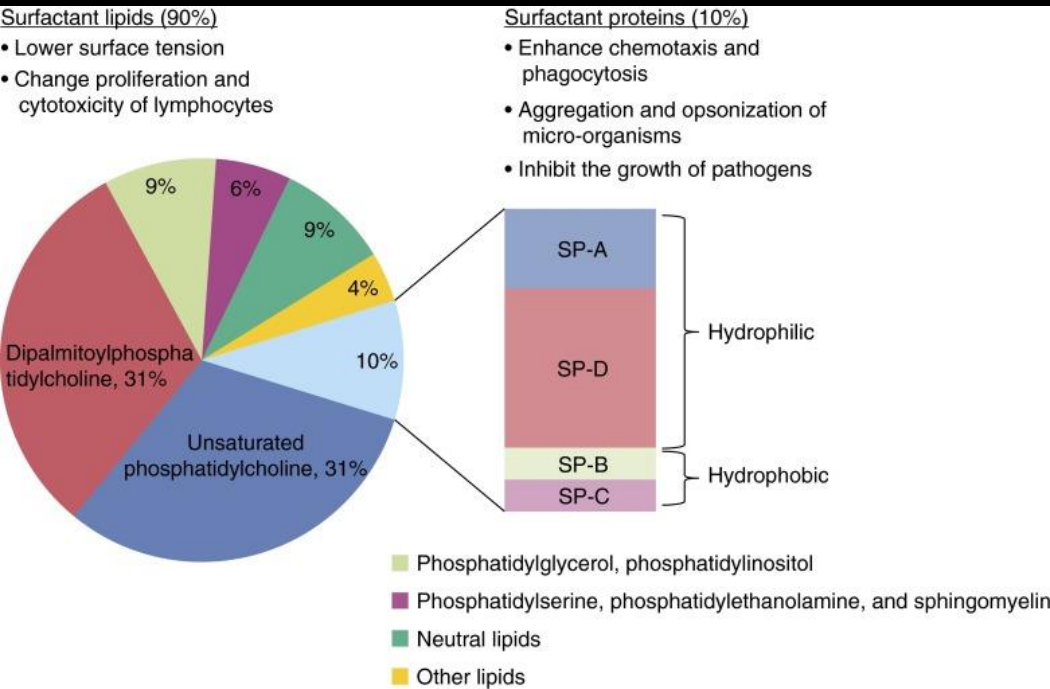
Alveolaris makrofág

I. tip. pneumocyta

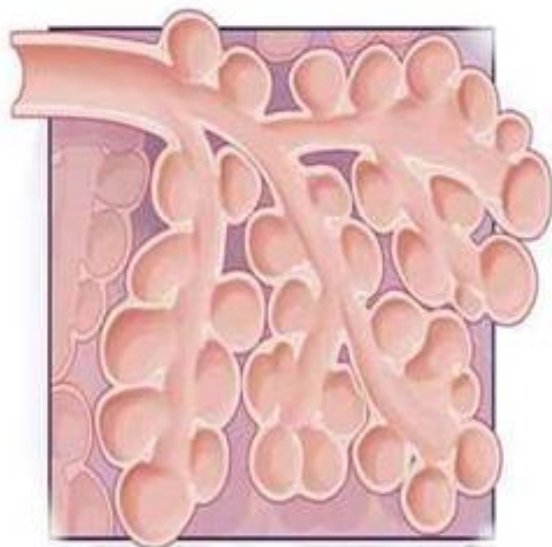
Újszülöttkori RDS (Respirációs disztressz-szindróma)



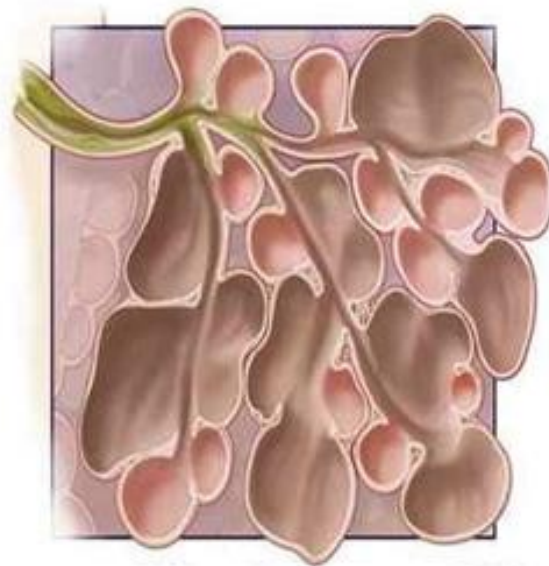
Surfactant 90%-a lipid (dipalmitoil-foszfatidilkolin, telítetlen foszfatidilkolin, egyéb lipidek) és 10%-a fehérje (sufactant - A,B,C,D fehérjék)



Emphysema (tüdőtágulat)

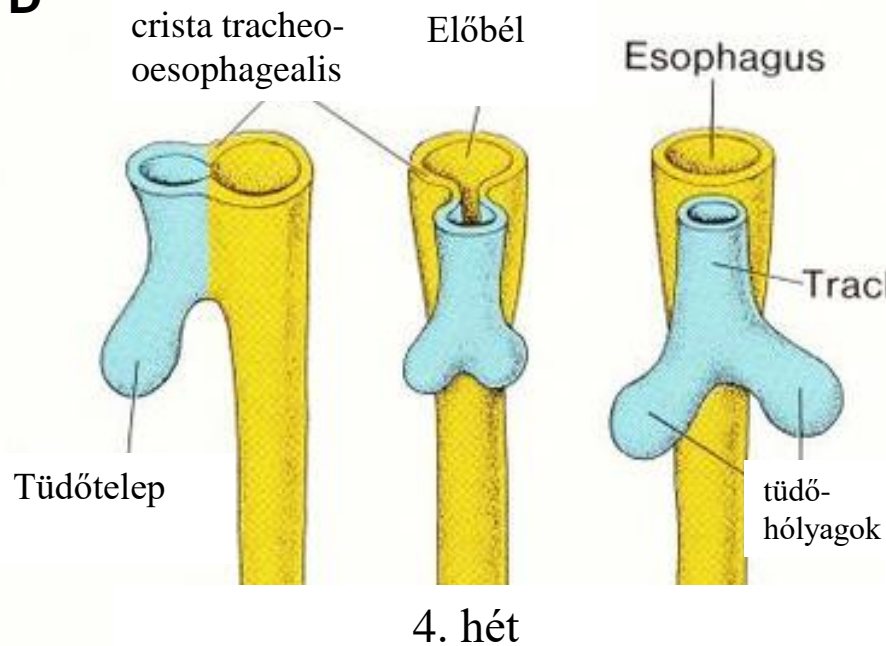
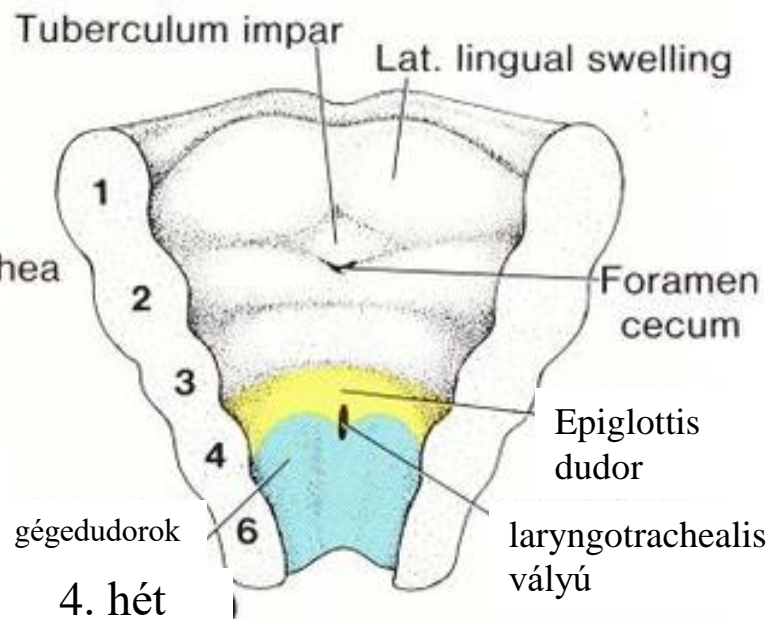
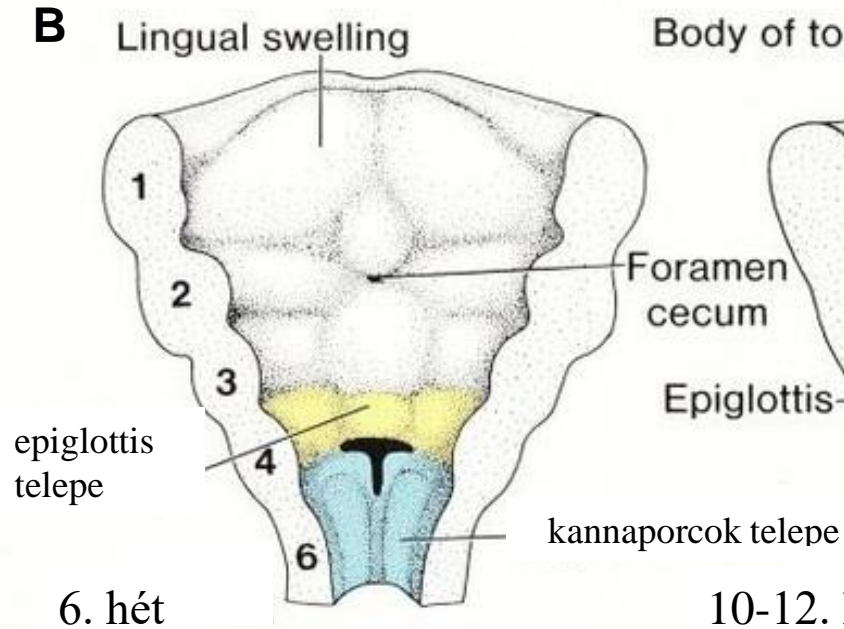
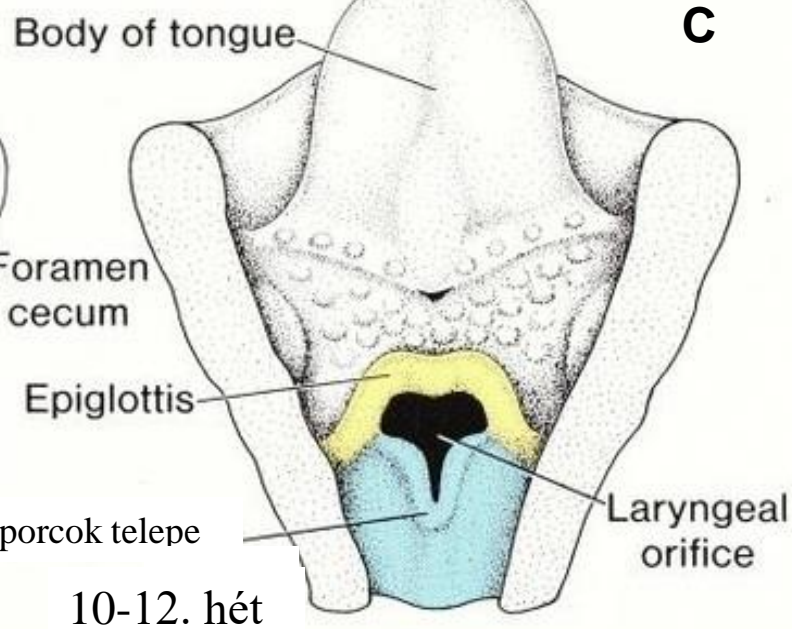


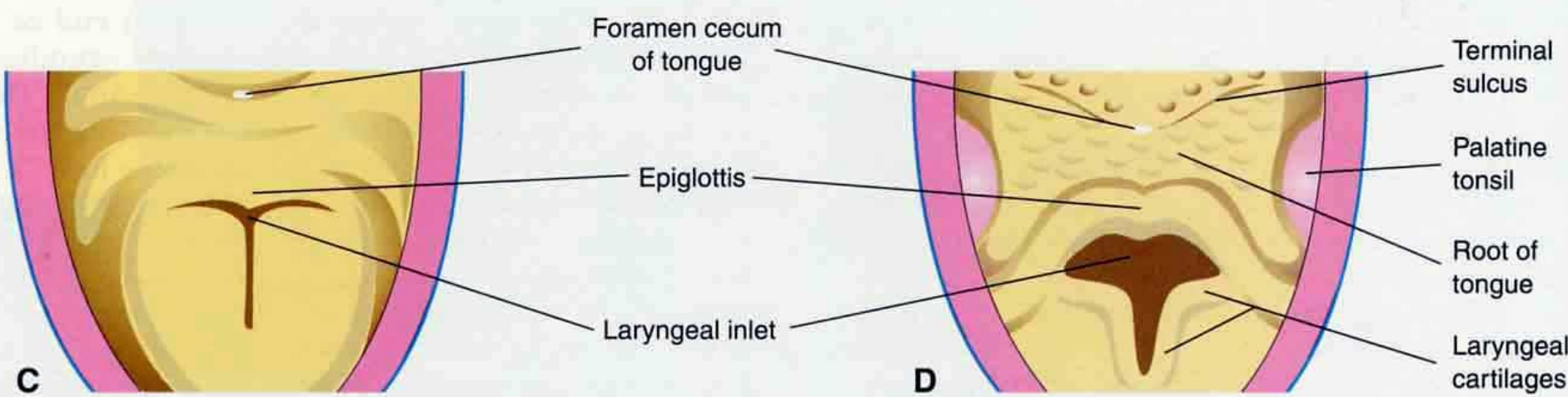
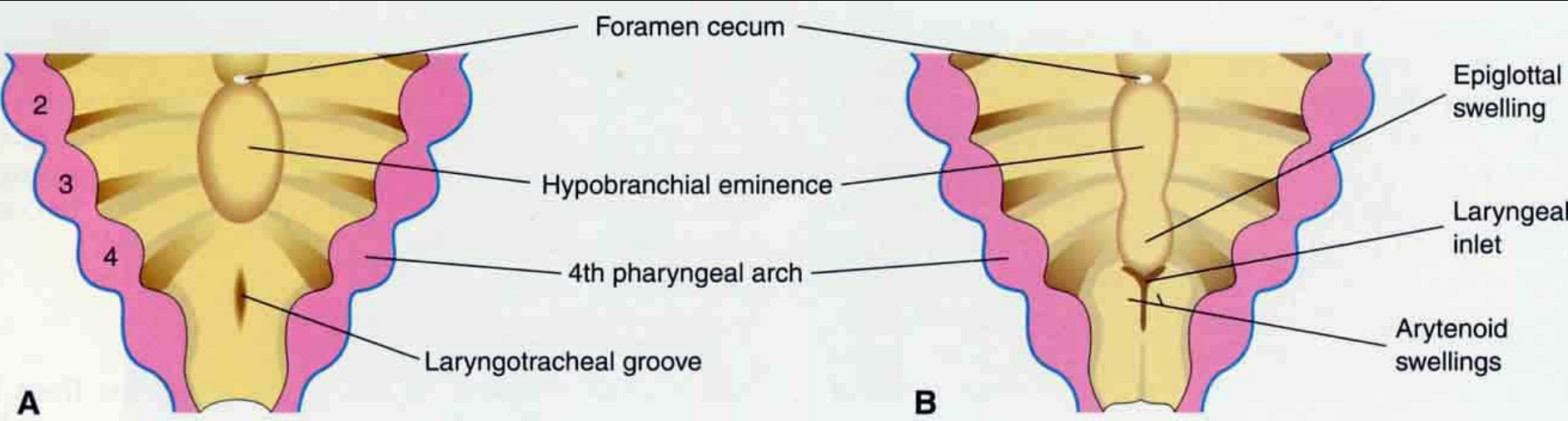
**egészséges
tüdőhólyagocskák**

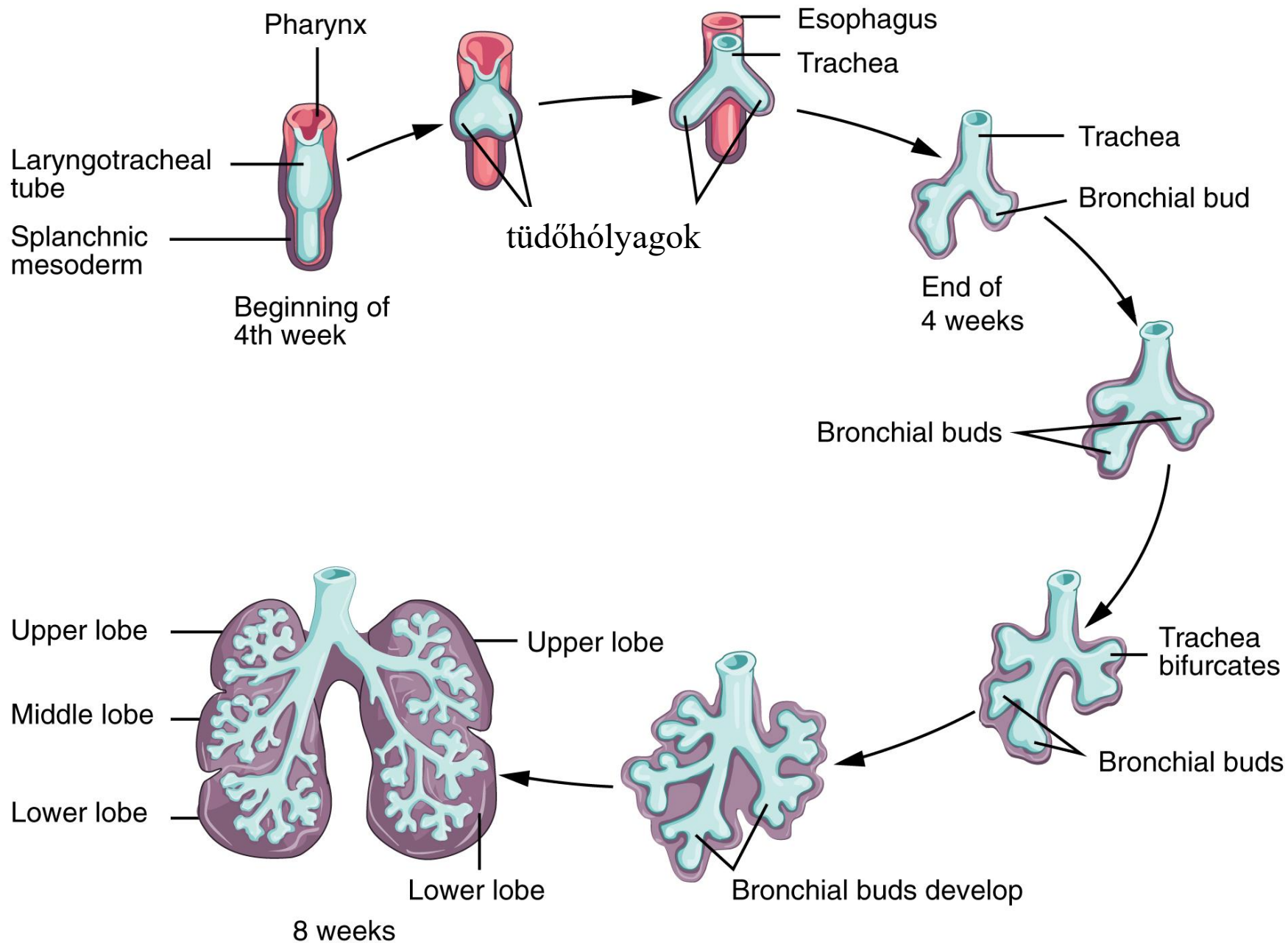


tüdőtágulat

A tüdő fejlődése

D**A****B****C**





A tüdő fejlődése

Magzati időszak

Postnatalis időszak

Embrionális

Pseudoglandularis

Canalicularis

Saccularis reminalis

Alveolaris



0

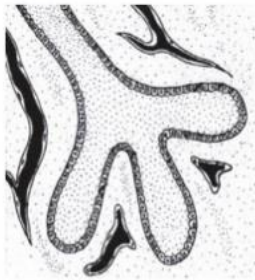
7 weeks

17 weeks

27 weeks

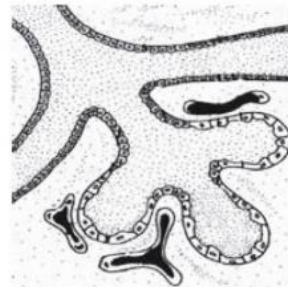
36 weeks

8-10 év



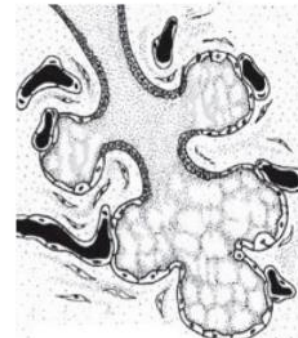
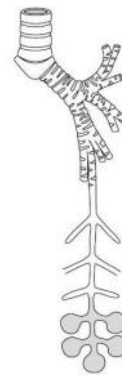
pseudo-glandularis fázis

- * bronchus segmentalis → bronchuli terminales
- * hengerhám + kapillárisok



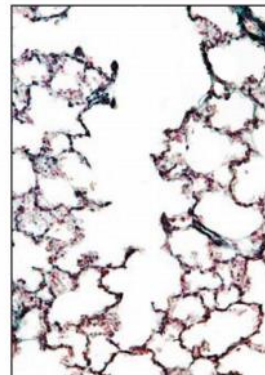
canalicularis fázis

- * tüdőleányke → sacculus terminalis
- * hengerhám az erek mellett „kőbösödik”



saccularis fázis

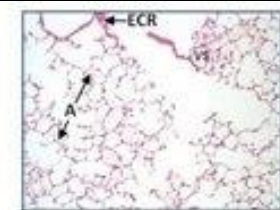
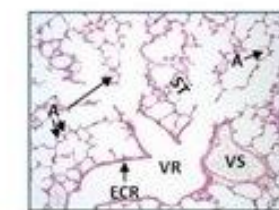
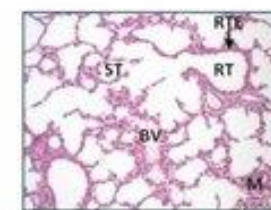
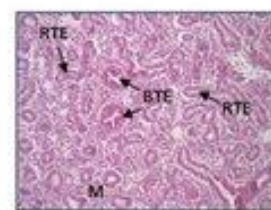
- * sacculus terminalisok sarjadzása és tágulása
- * köbhám → pneumocyták



alveolaris fázis

- * a sacculus alveolarisok kialakulása
- * I-es típus alveoláris pneumocyta (lapos)
- * II-es típus alveoláris pneumocyta (köbös) → surfactant

Conception



Mature lung

Embryonic

Mouse: GD 9-GD 11.5
Human: 5-8 week

Pseudoglandular

Mouse: GD 11.5 - GD 16.5
Human: 8-16 week

Canalicular

Mouse: GD 16.5 - GD 17.5
Human: 16-25 weeks

Saccular

Mouse: GD 17.5 - PN 5
Human: 25-36 week

Alveolar & Microvascular

Mouse: PND 5 - PND 30
Human: 36 weeks - 2 year

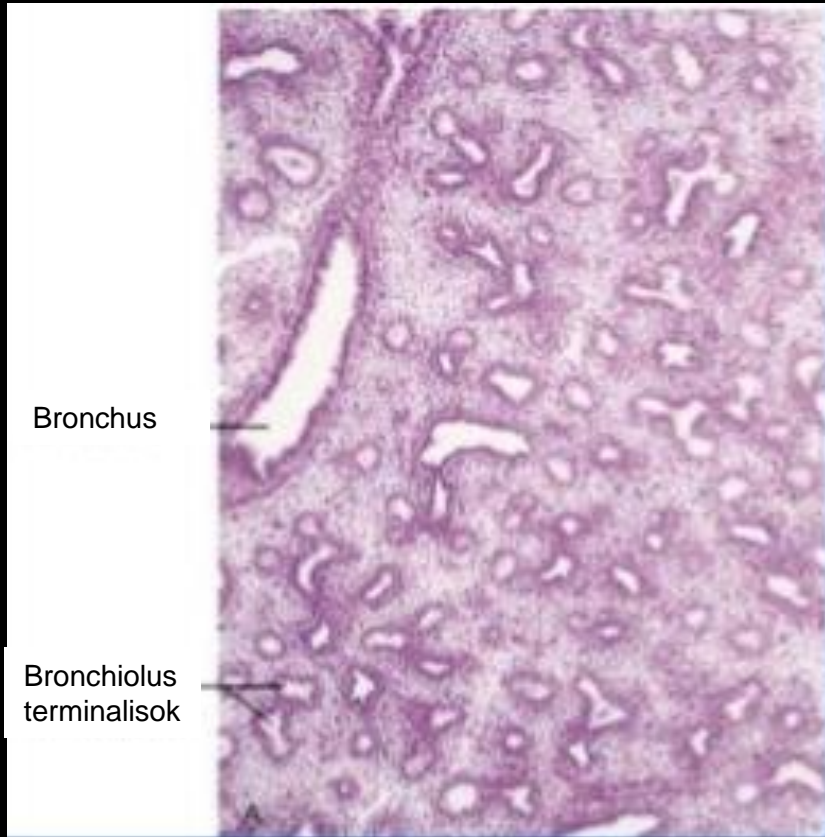
Adulthood

Parturition

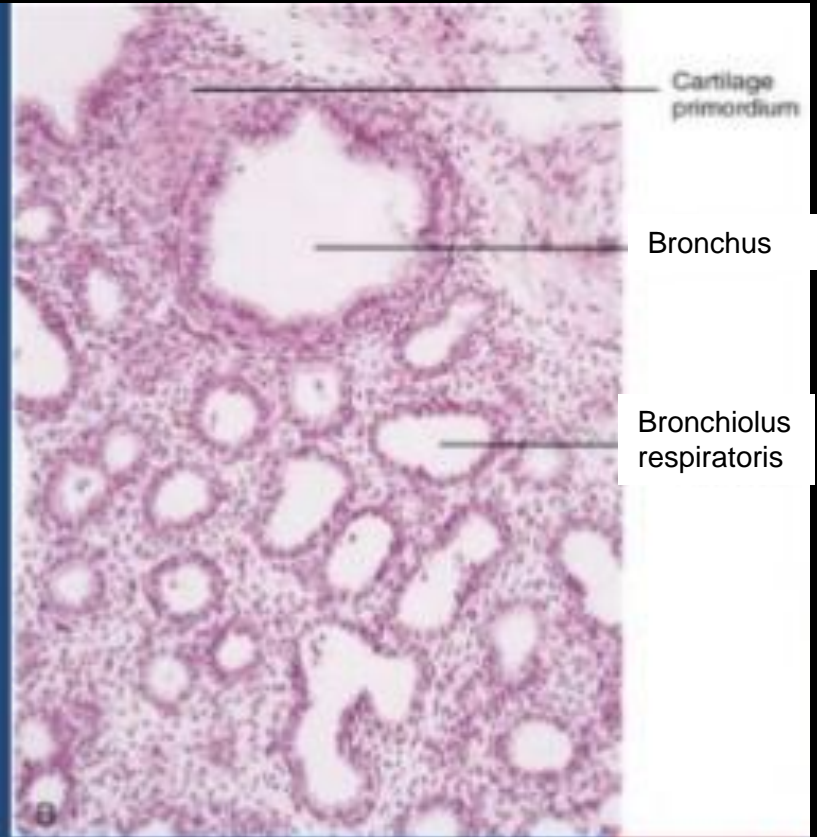
Birth

Mouse *in utero* development

Human *in utero* development

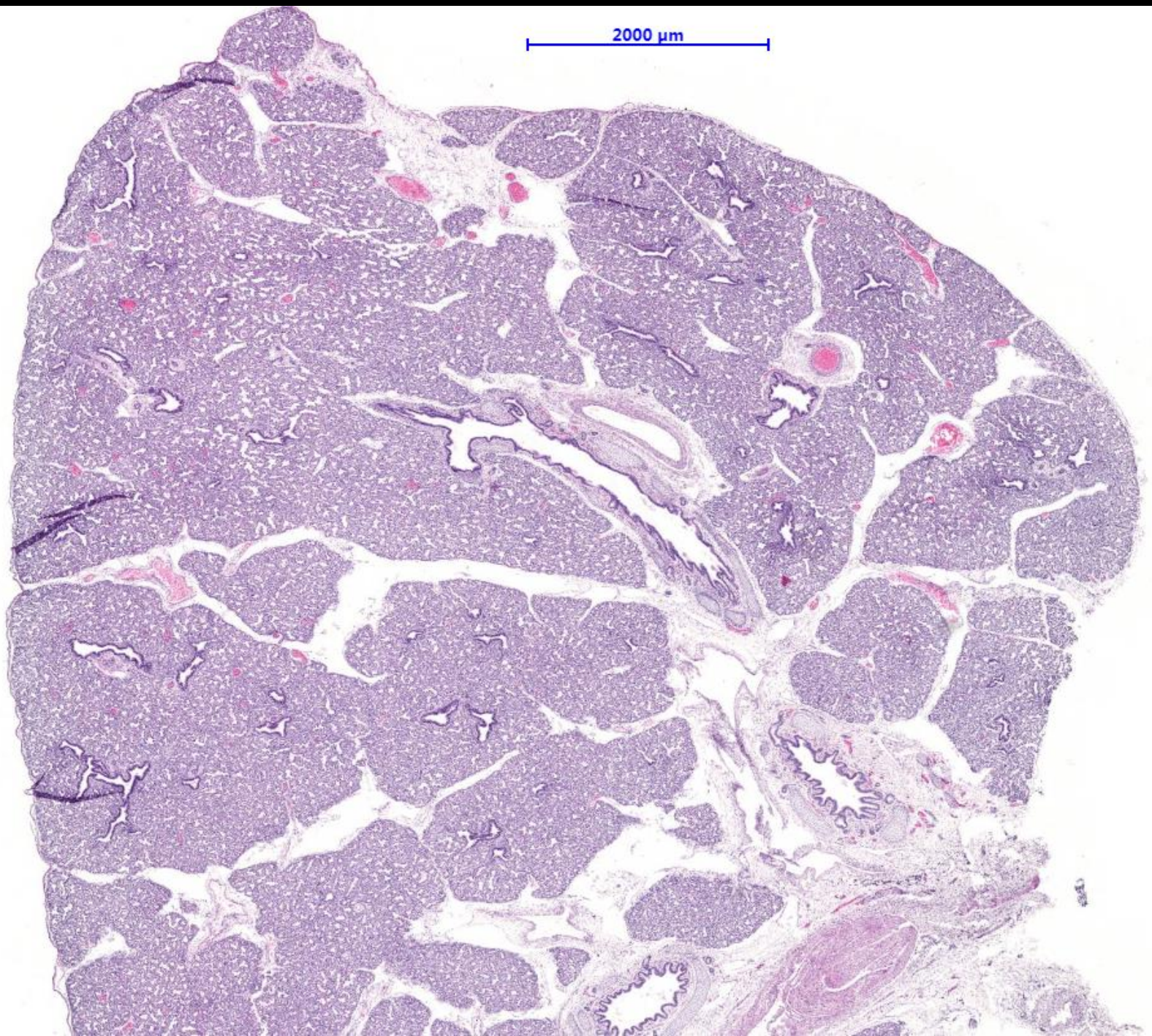


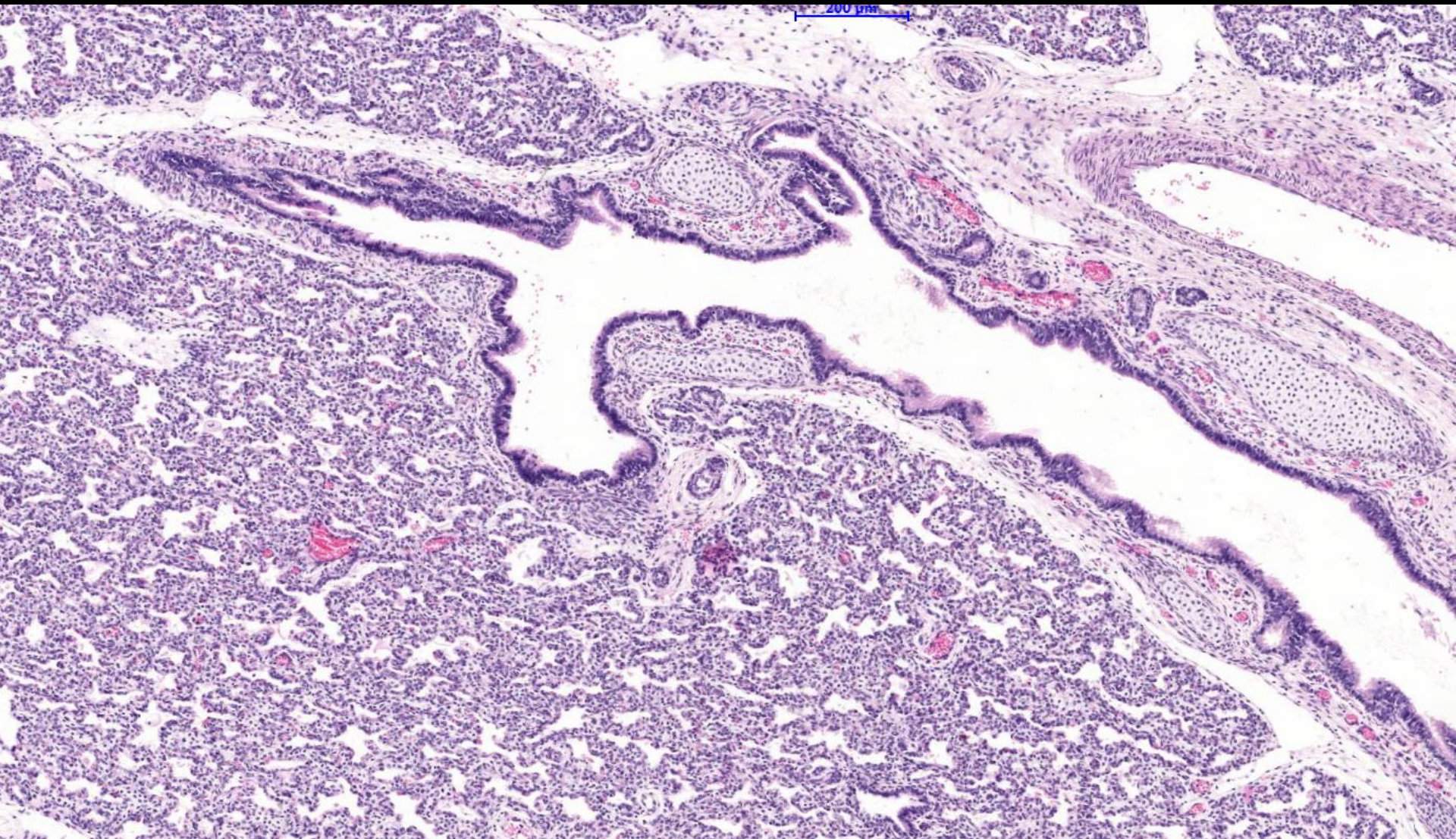
Pseudoglandular Phase

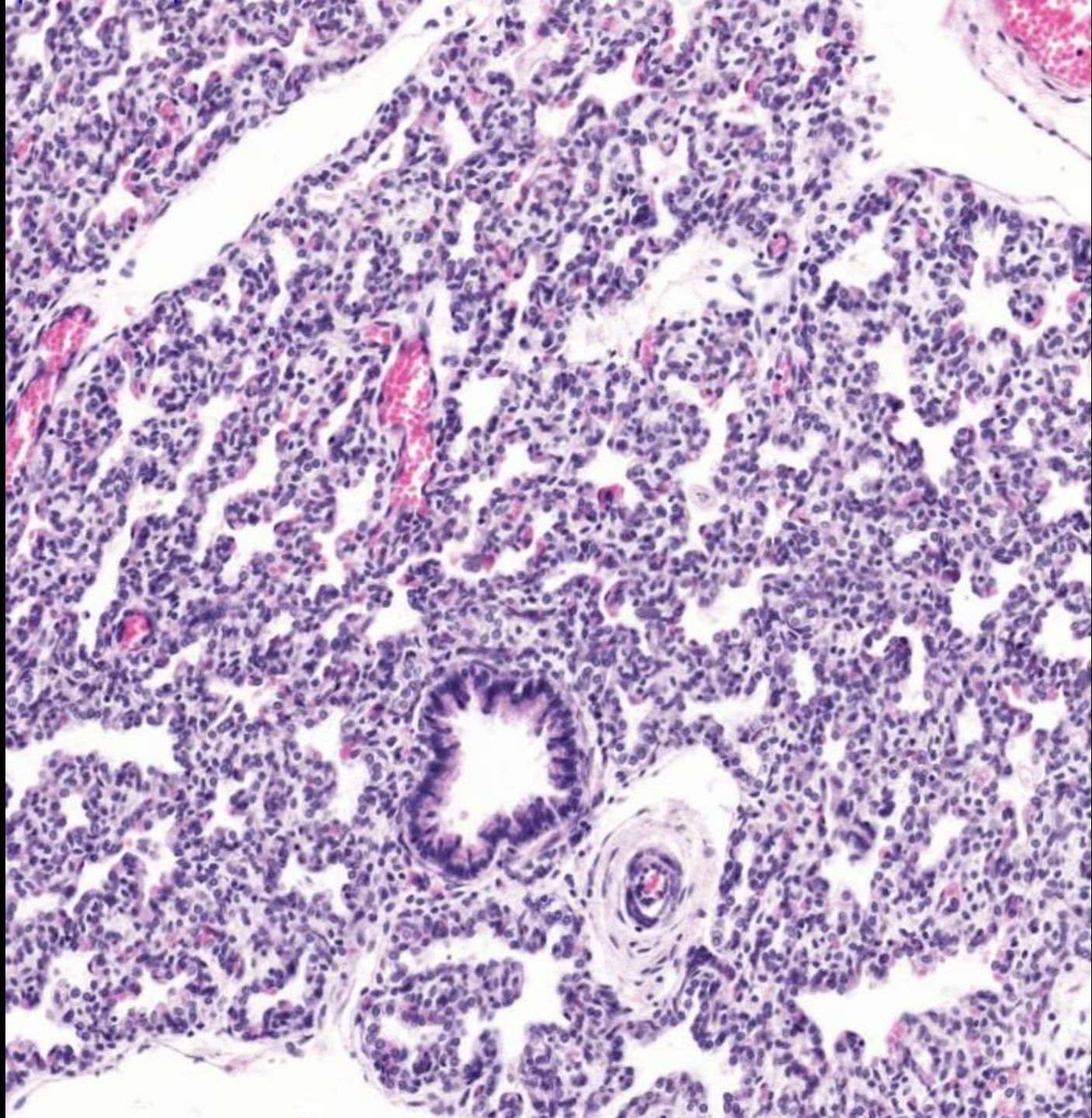


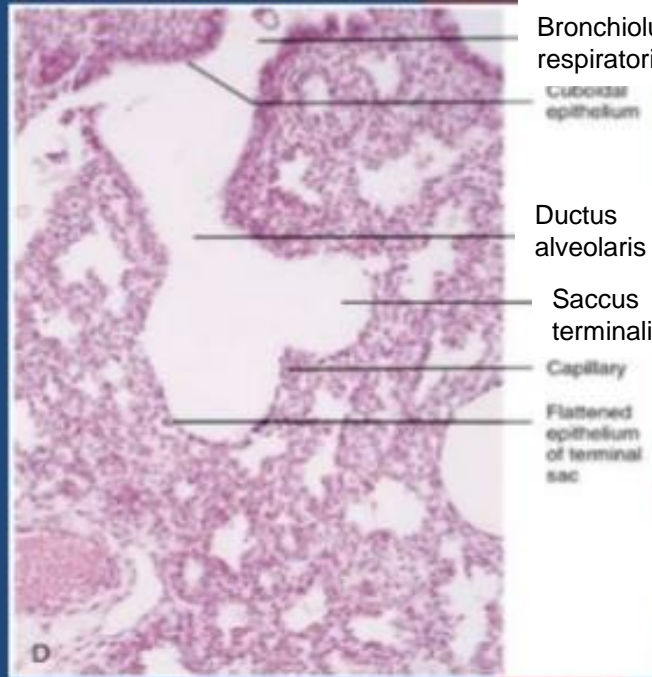
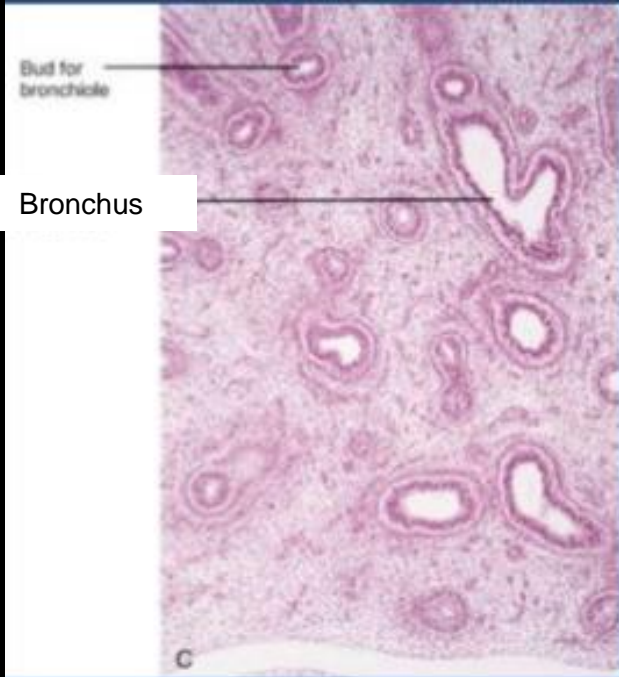
Canalicular Phase

2000 μm

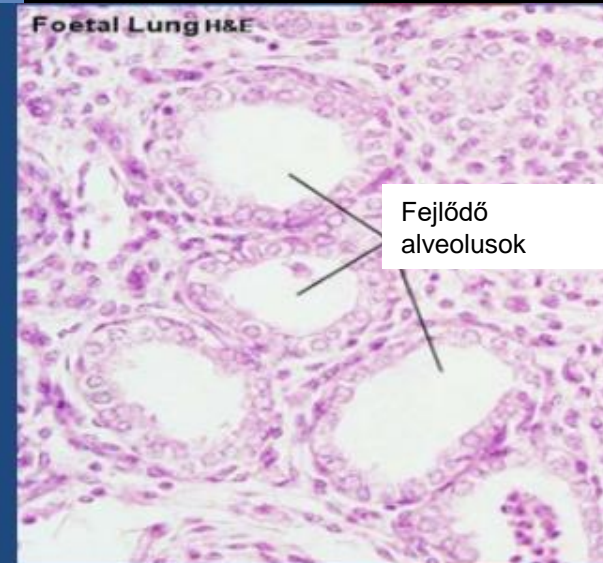
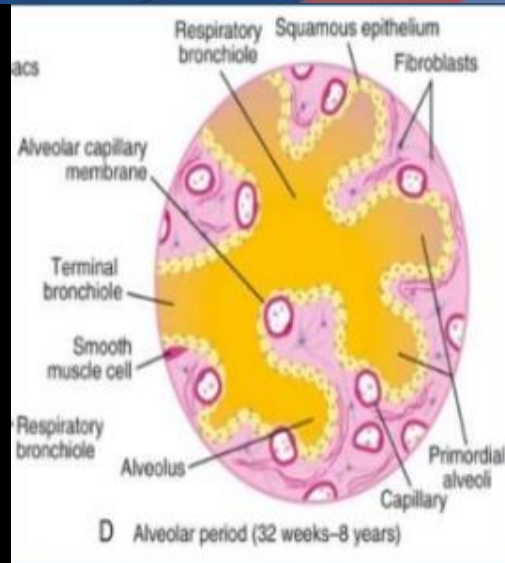






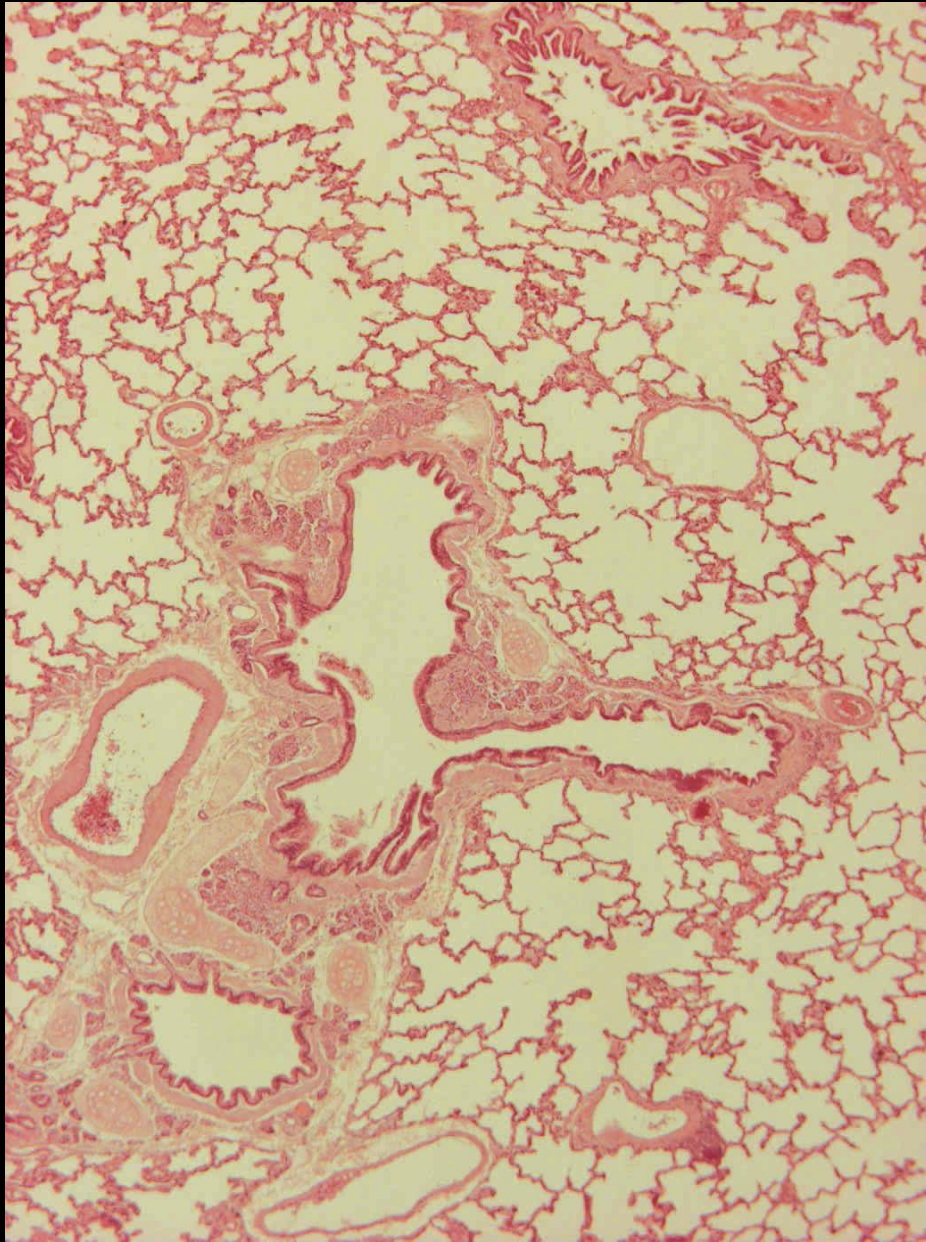


Saccular Phase

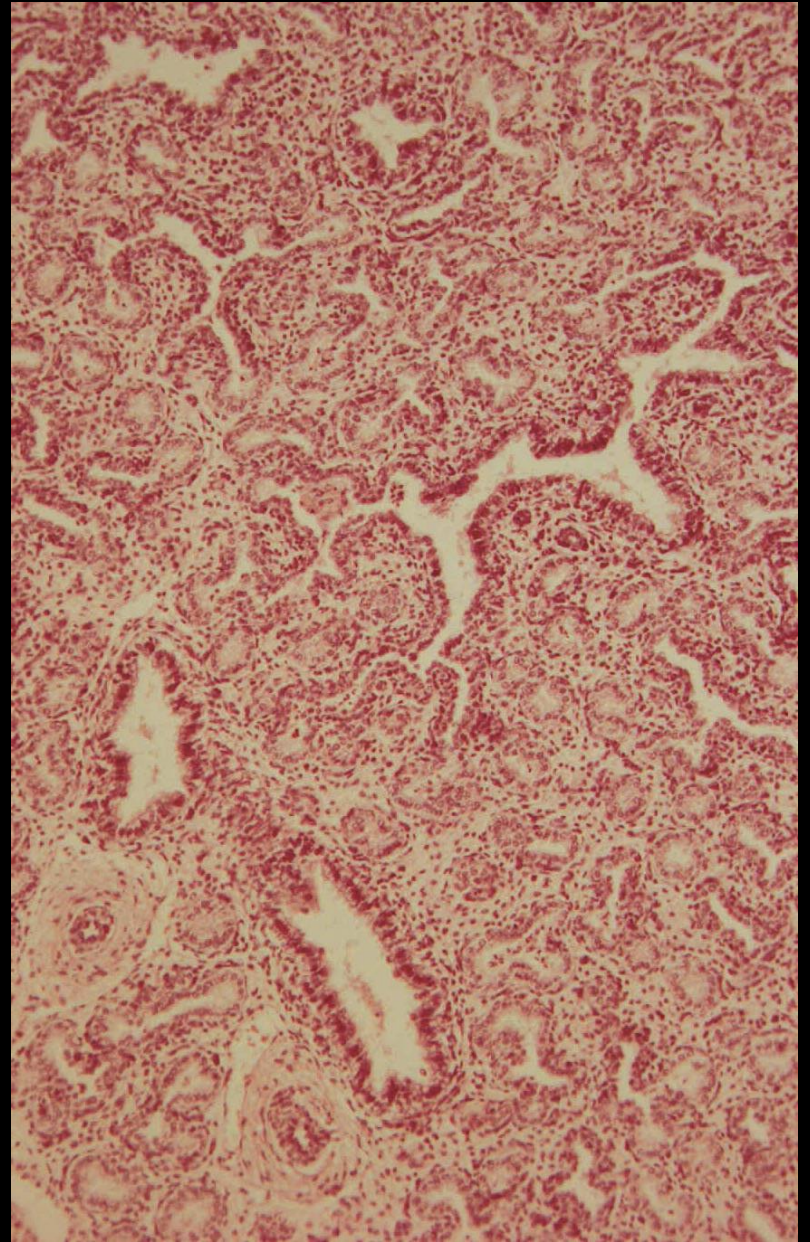


Alveolar Phase

Felnőtt tüdő



Magzati tüdő



A tudó fejlődése

<https://www.youtube.com/watch?v=ZoLuOUaddbE>

