

RESPIRATORY SYSTEM INTRODUCTION

revised 17 March 2016

S&M: 583- KE:70-77 KE 73

Marieb, p. 724, Martini's 5th: 798-842, 6th: 827-867, 7th: 814-859, 8th: 826-871, 9th: 814-836, 10th: 831-878

Three levels of respiration: external: gas exchange in lungs
 internal: gas exchange in tissues
 cellular: glucose "burned" with O₂ to CO₂

EMBRYOLOGY:

4 wk old fetus: **laryngotracheal bud**. forms as a ventral diverticulum in digestive tract just below pharynx

Elongates into **trachea** which branches and rebranches:

bronchi, bronchioles, terminal bronchioles dilate to **alveoli**

Thus, entire respiratory tract epithelium is derived from **endoderm**

Connective tissue and smooth muscle components from **mesoderm**

Respiratory tree lining: **pseudostratified ciliated columnar epithelium**

Elasticity of lungs favor collapse, **integrity of pleural space** prevents

ANATOMY: (p. 8, KE 71, 72) **external nares** framed by cartilage plates:

alar, lateral nasal, nasal septum (forms **vestibule** of nose)

Septum: **septal cartilage** joins vomer, ethmoid perpendicular plate

Roof: ethmoid cribriform plate, houses olfactory epithelium

Lateral walls: **conchae** (2 on ethmoid) plus inferior concha (turbinate)

Floor: hard palate formed by palatine bone and palatine processes of maxilla, soft palate fleshy

Meatus: recess between conchae.

Four paranasal sinuses lighten skull, resonance chambers, produce mucous: (p 836: poor)

frontal	drainage: middle meatus
sphenoid	drainage: above superior conchae
ethmoid	drainage: (many!: 14) superior and middle dorsal meatus
maxillary	drainage: middle meatus
nasolacrimal duct	drainage: inferior meatus

Mucus membrane on conchae "**air conditions**" inspired air:

1) warms, 2) moistens, 3) cleanses (traps particulates = post nasal drip)

Pharynx: (p 836) stratified squamous, connects mouth, nose, middle ear, larynx and esophagus

Nasopharynx	eustachian tubes on post. wall
1) pharyngeal tonsils	if swollen, termed adenoids
Oropharynx	intersection with digestive tract
2) palatine tonsils	line side walls, on either side of uvula
3) lingual tonsils	embedded in base of tongue
Laryngopharynx	contains epiglottis

LARYNX: framework of cartilage (9 pieces), suspended from hyoid bone (p. 838) cuneiform ("wedge shape") and corniculate ("horn little") not shown]

thyroid cart. largest, thyrohyoid membrane ties to hyoid

epiglottis guards glottis

cricoid cart below, mounted on "ring like" top of trachea

arytenoid cart: paired, tied to vocal "ladle like" cords, control pitch.

Thyroid-cricoid muscle: vocal pitch

ventricular folds, (vestibular folds)

false vocal cords, subject to: inflammation = **laryngitis**

