

RESPIRATORY SYSTEM

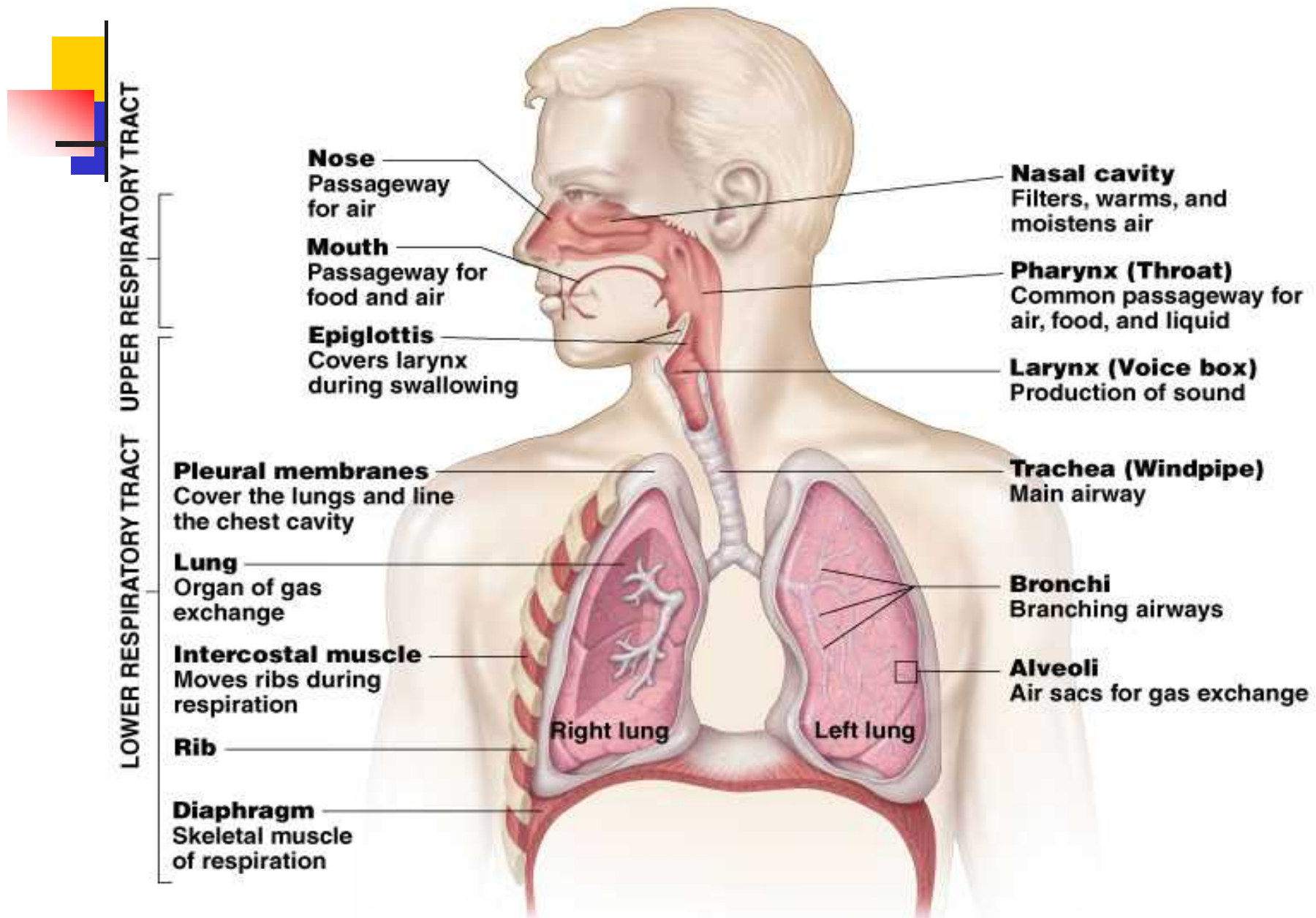




What is Human Respiration?

- The human respiratory system allows one to obtain oxygen and eliminate carbon dioxide.
- Breathing consists of two phases, inspiration and expiration
 - Inspiration (Inhalation)- the process of taking in air (O₂)
 - Expiration (Exhalation)- the process of blowing out air (CO₂)

Human Respiratory System



Components of the Upper Respiratory Tract

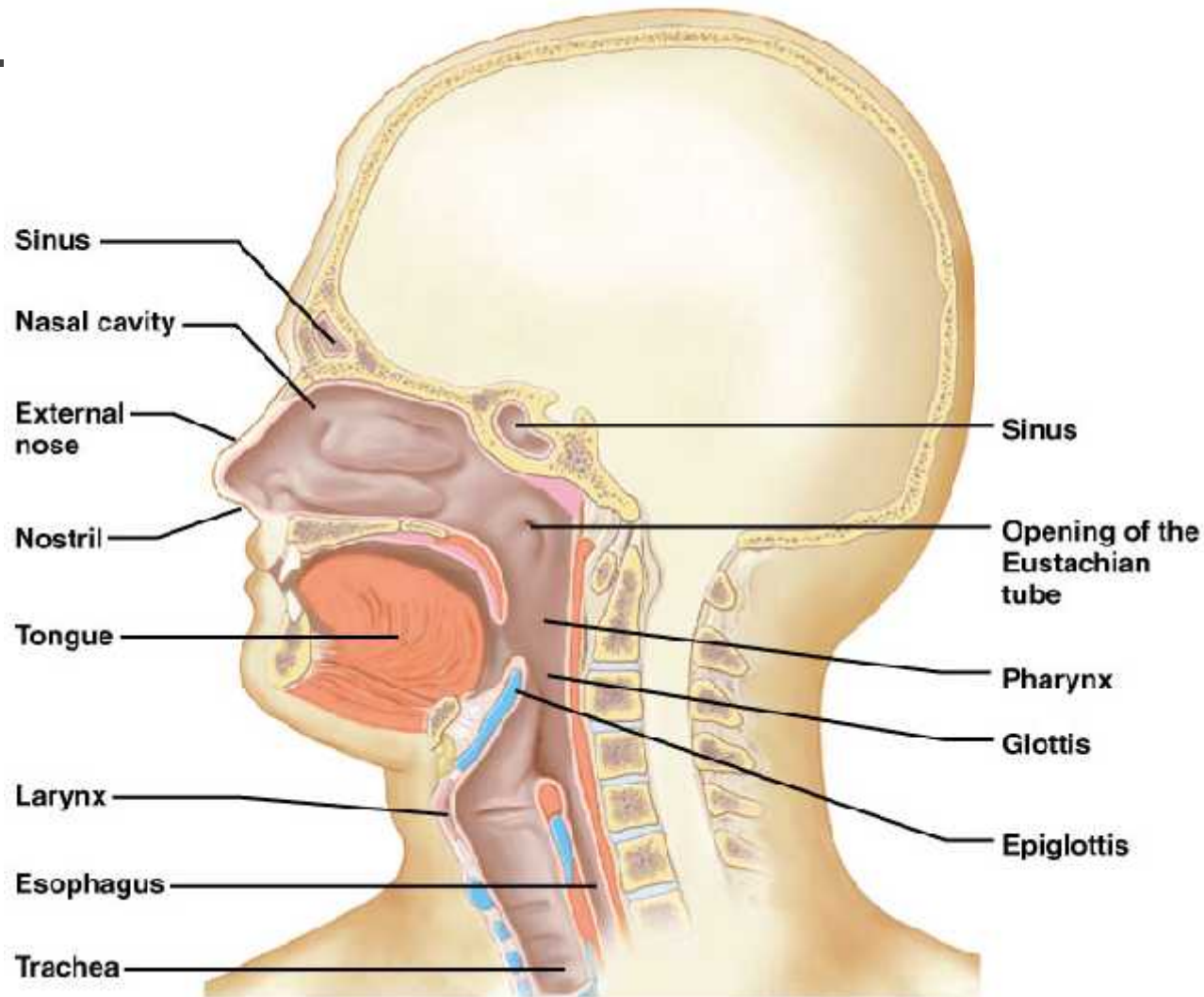
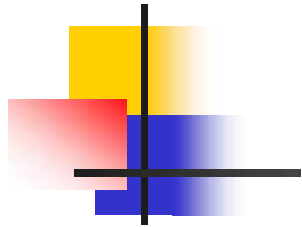


Figure 10.2

Components of the Lower Respiratory Tract

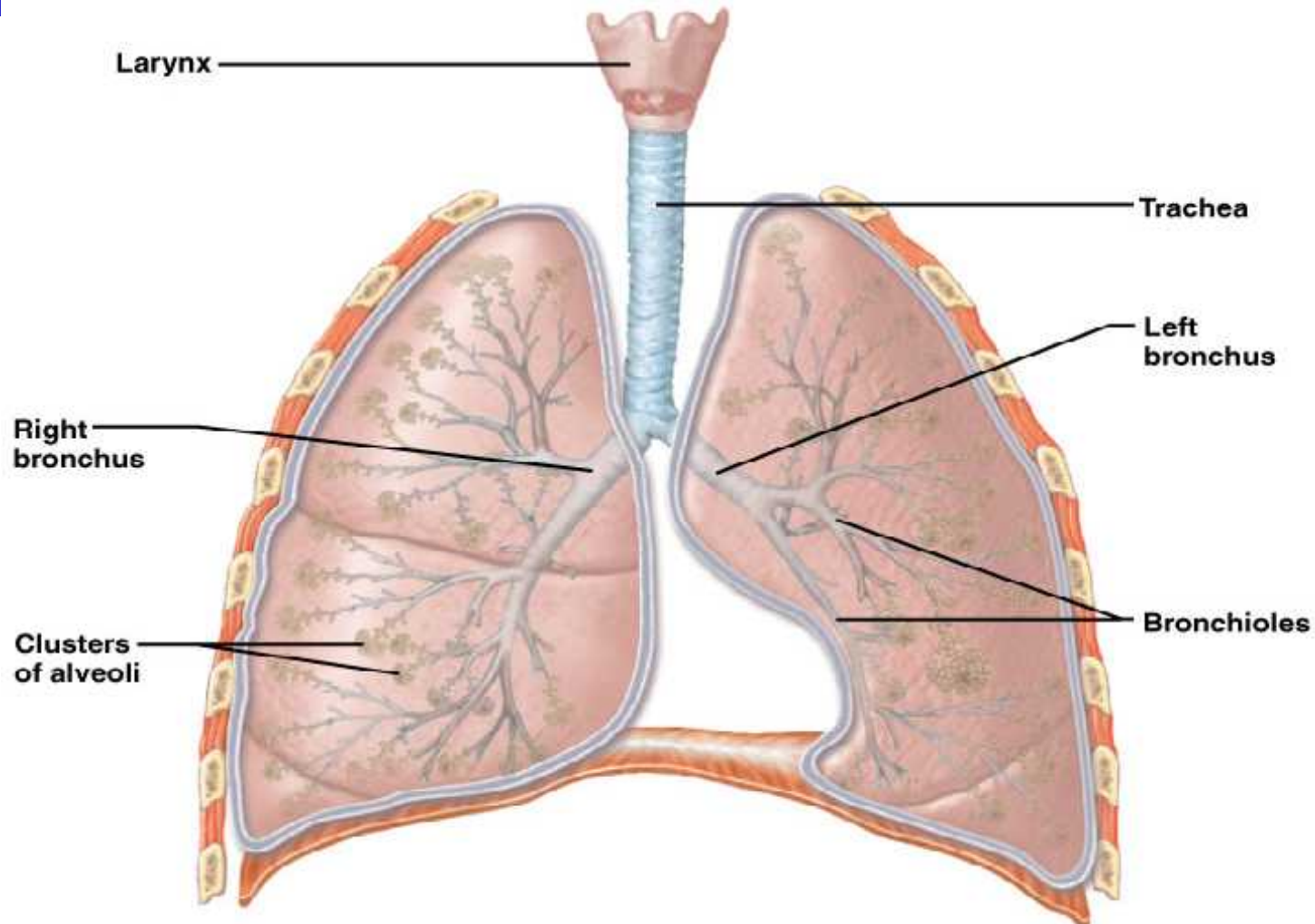
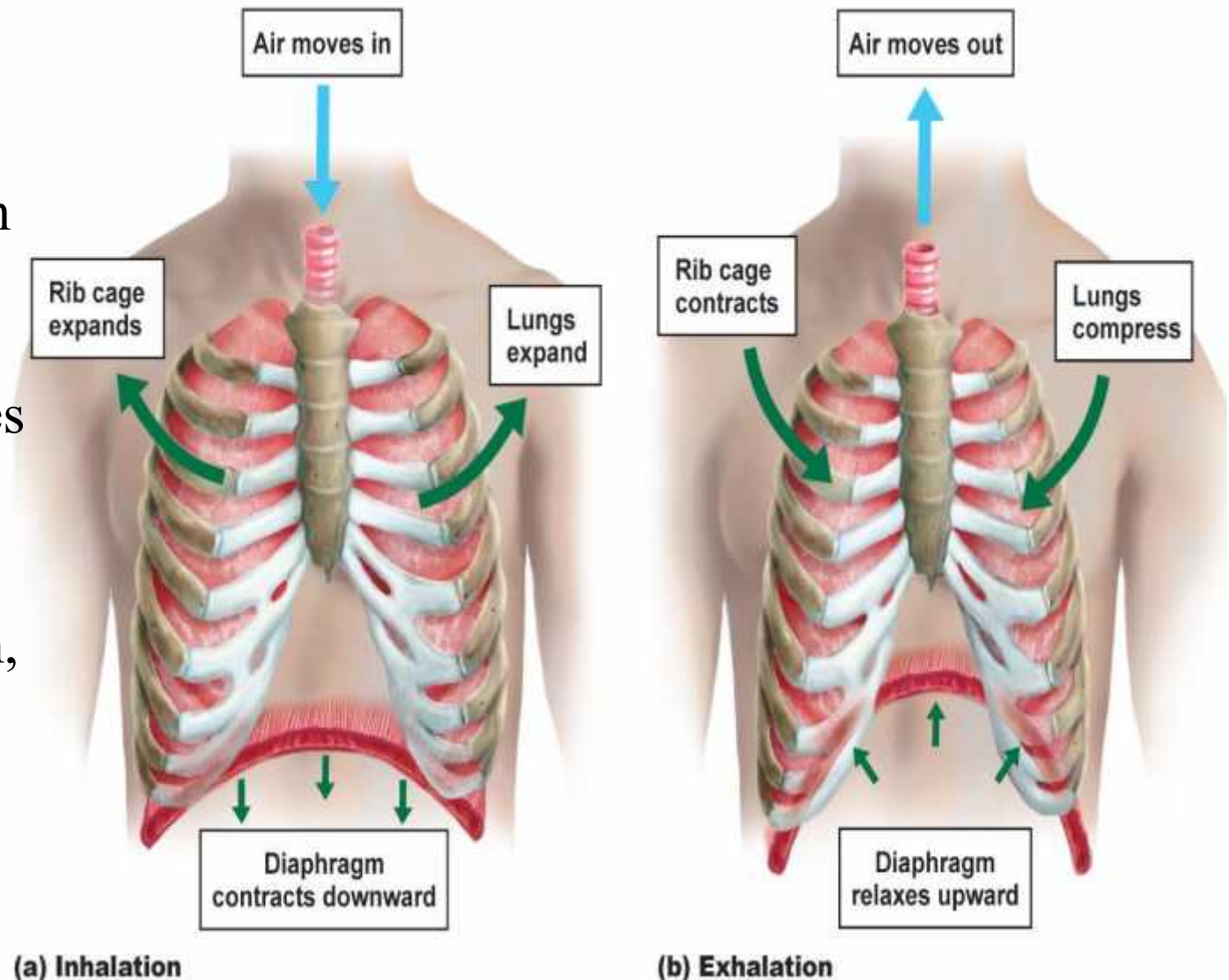


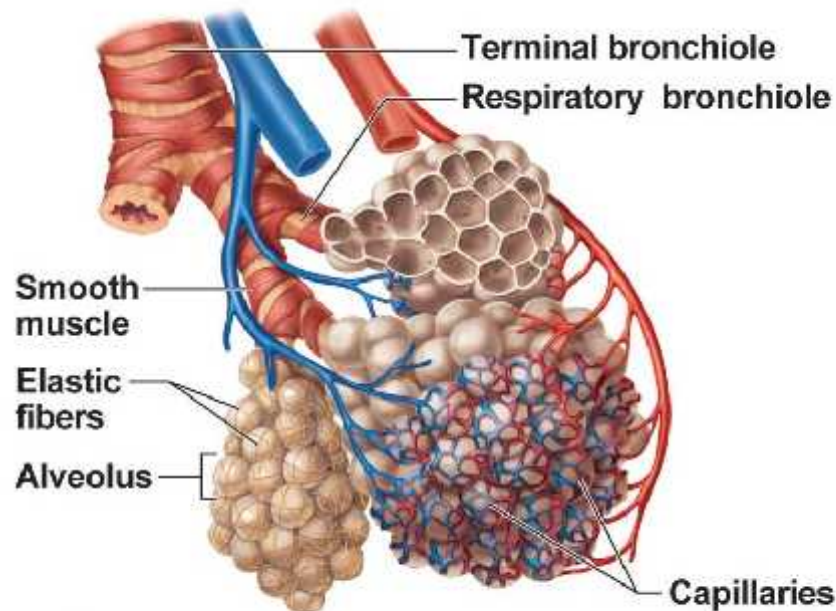
Figure 10.3

Moving air in and out

- During inspiration (inhalation), the diaphragm and intercostal muscles contract.
- During exhalation, these muscles relax. The diaphragm domes upwards.

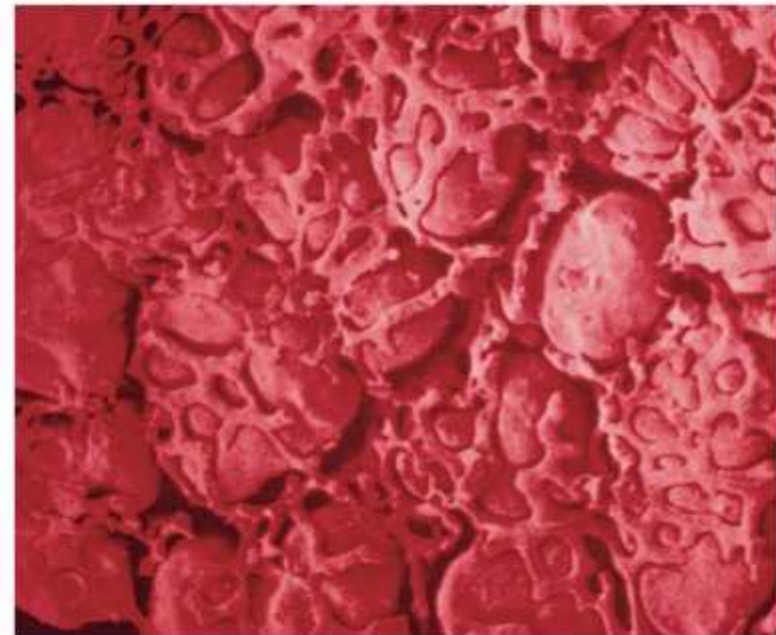


Alveoli and Respiratory Membrane



(a) Diagrammatic view of capillary-alveoli relationships

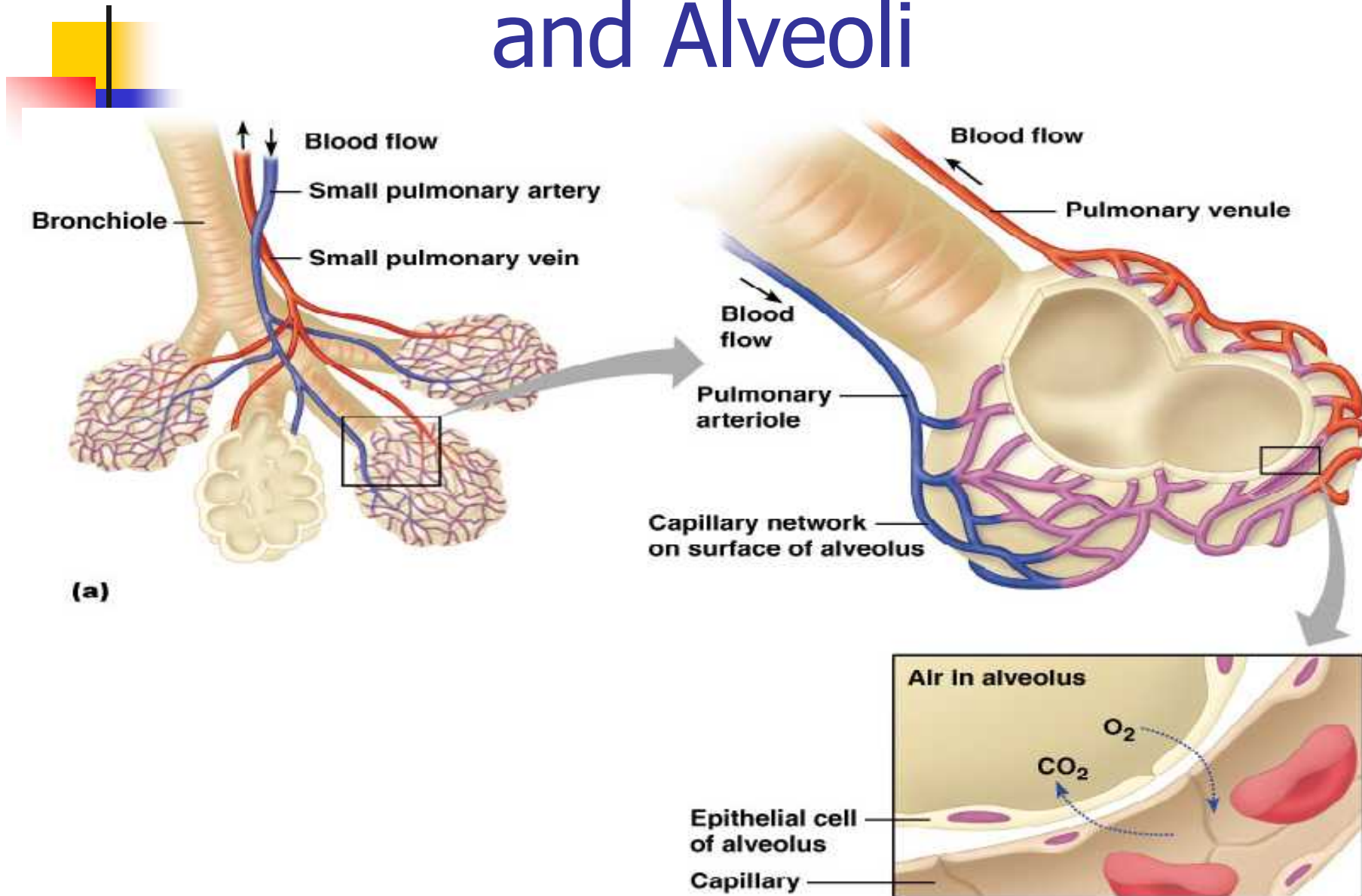
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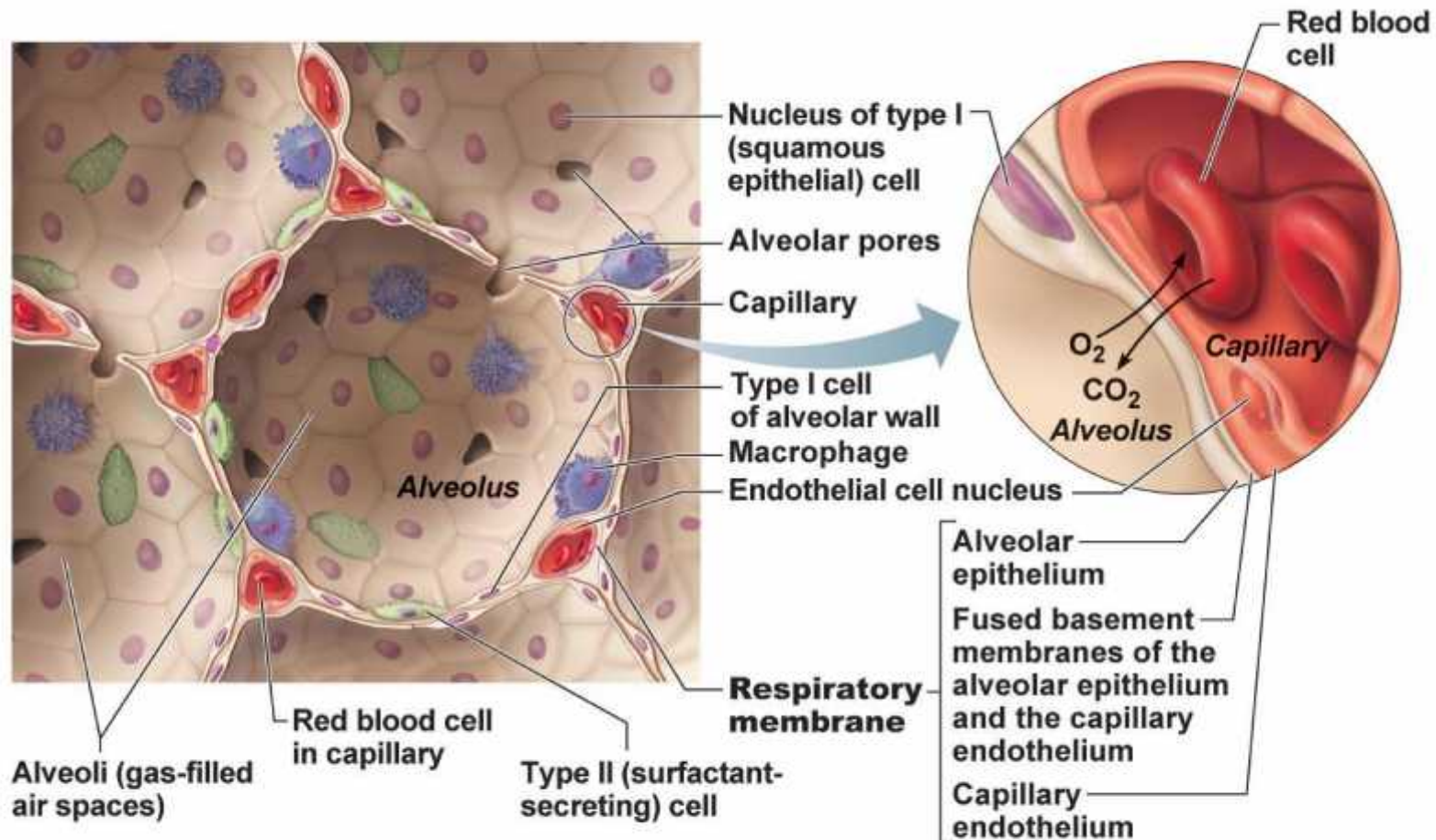
(b) Scanning electron micrograph of casts of alveoli and associated pulmonary capillaries (300x)

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Gas Exchange Between the Blood and Alveoli

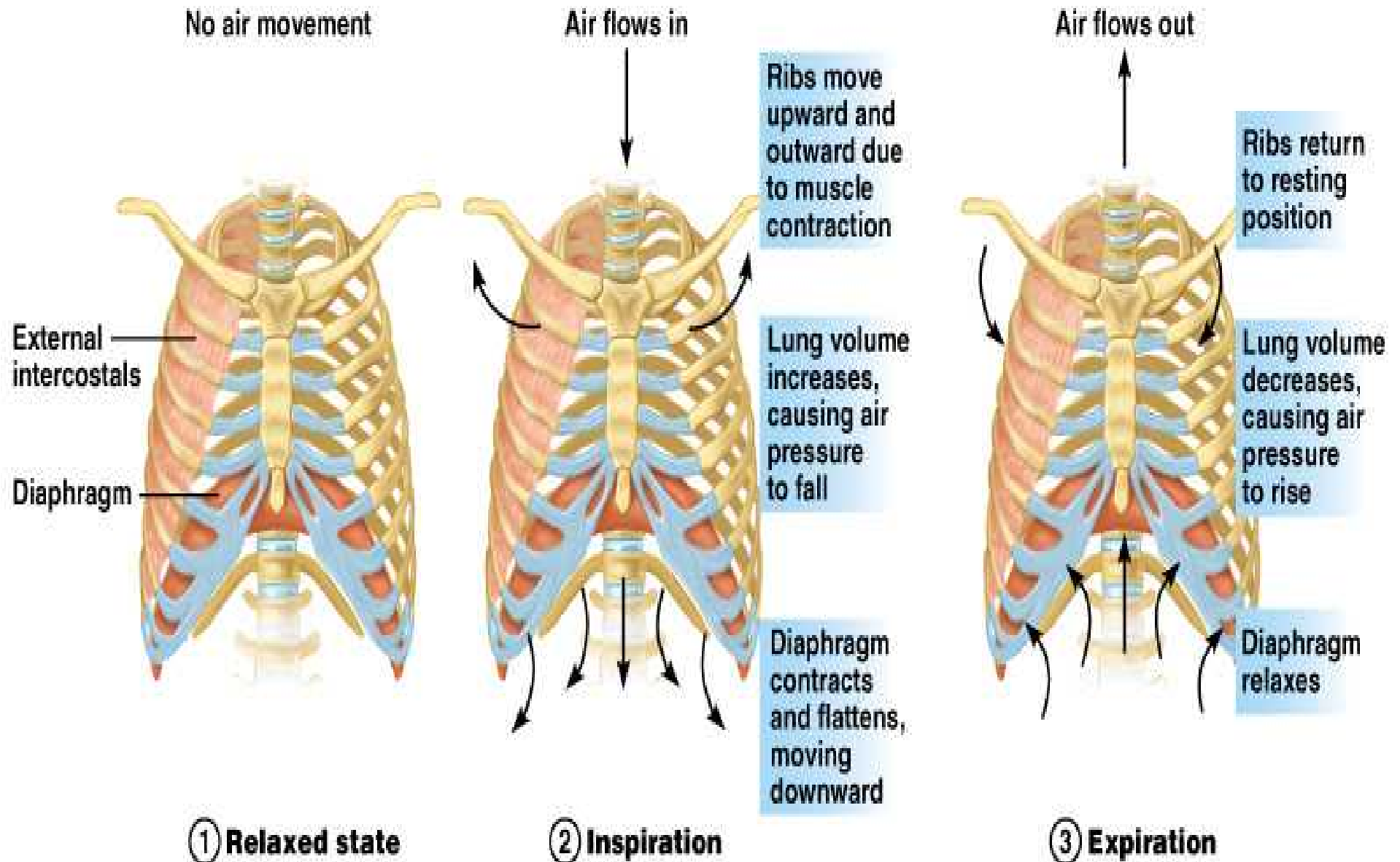


Alveoli and Respiratory Membrane

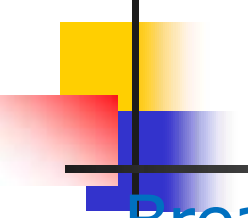


(c) Detailed anatomy of the respiratory membrane

Respiratory Cycle



Four Respiration Processes

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- Breathing (ventilation): Oxygen in to and Carbon Dioxide out of the lungs
 - External respiration: gas exchange between air and blood (what can be exposed to the outside of the body)
 - Internal respiration: gas exchange between blood and tissues (what cannot be exposed to the outside of the body)
 - Cellular respiration: oxygen used to produce ATP (energy), carbon dioxide is the waste product –
Where does this process occur?



Functions of the respiratory system

1. The inhalation and exhalation of air or Breathing.
2. Gas exchange between the lungs and the bloodstream (*External Respiration*).
3. Gas exchange between the bloodstream and the body tissues (*Internal Respiration*).
4. Vibration of the vocal cords in the larynx to produce Sound.
5. The sense of Smell.