

The trachea and the bronchial 'tree' conduct air down to the **respiratory surfaces**.

There is no exchange of gases in these tubes.

IP[5] p132

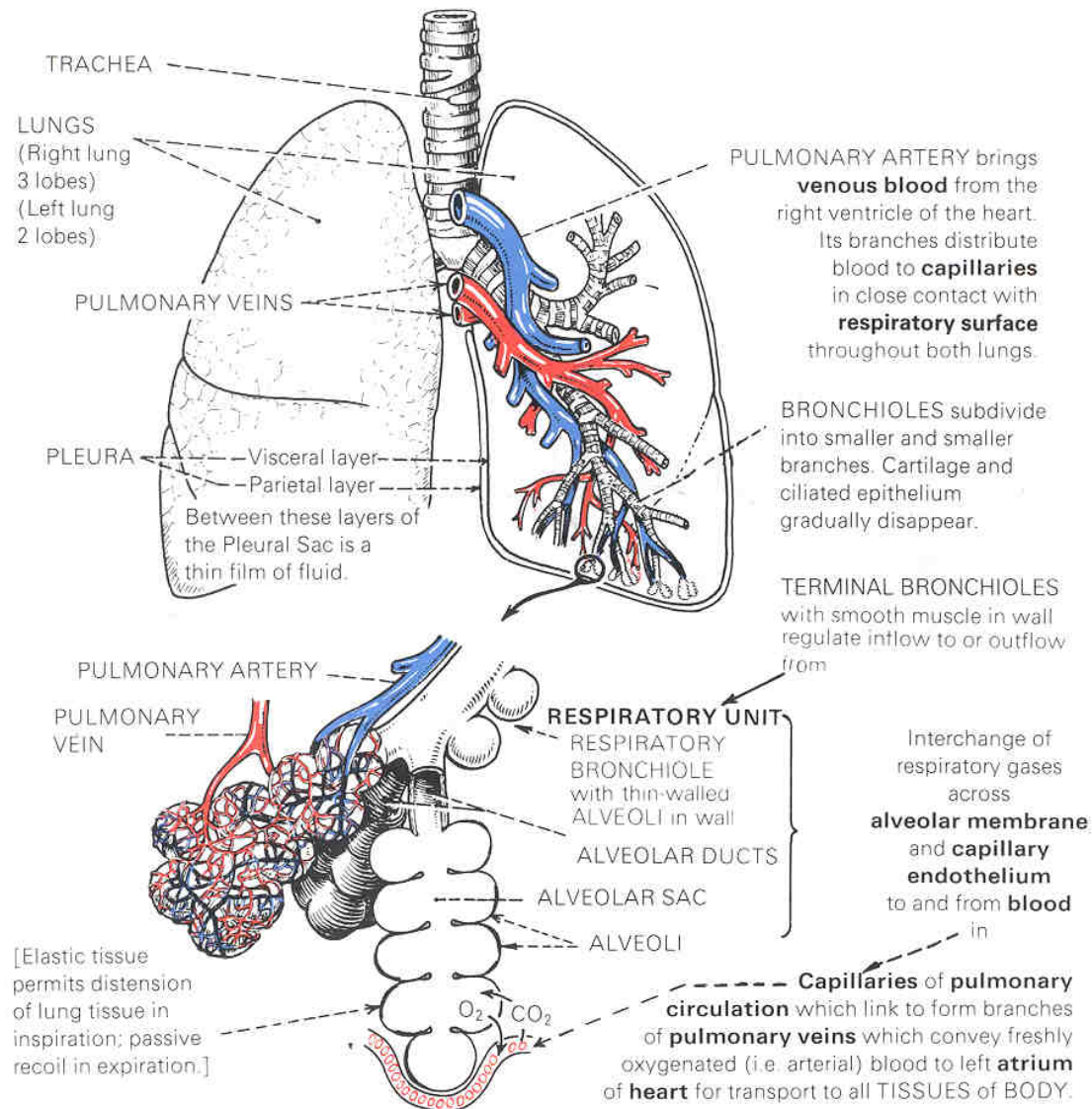
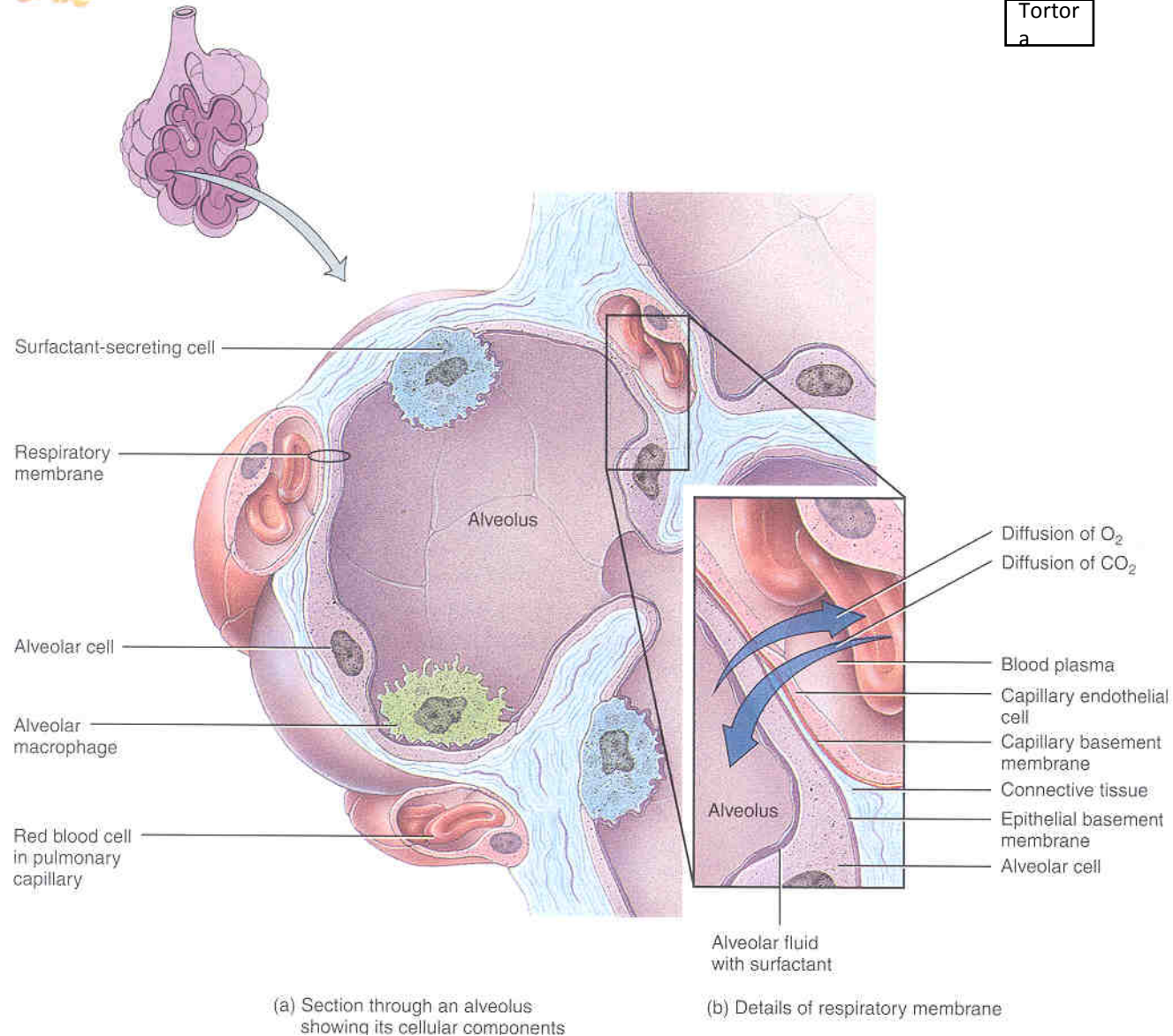


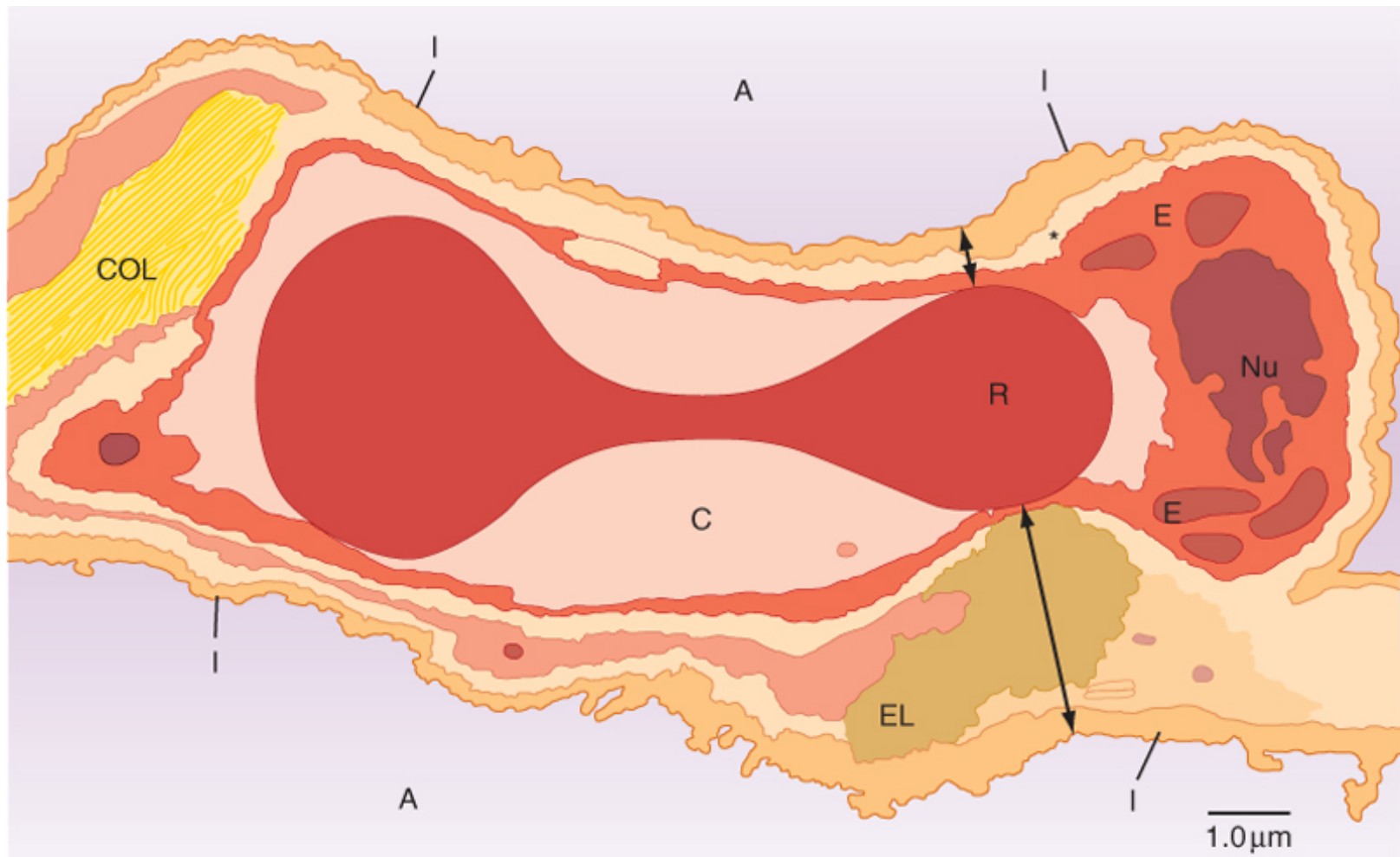
Figure 18.6 Structure of an alveolus.

The exchange of respiratory gases occurs by diffusion across the respiratory membrane.



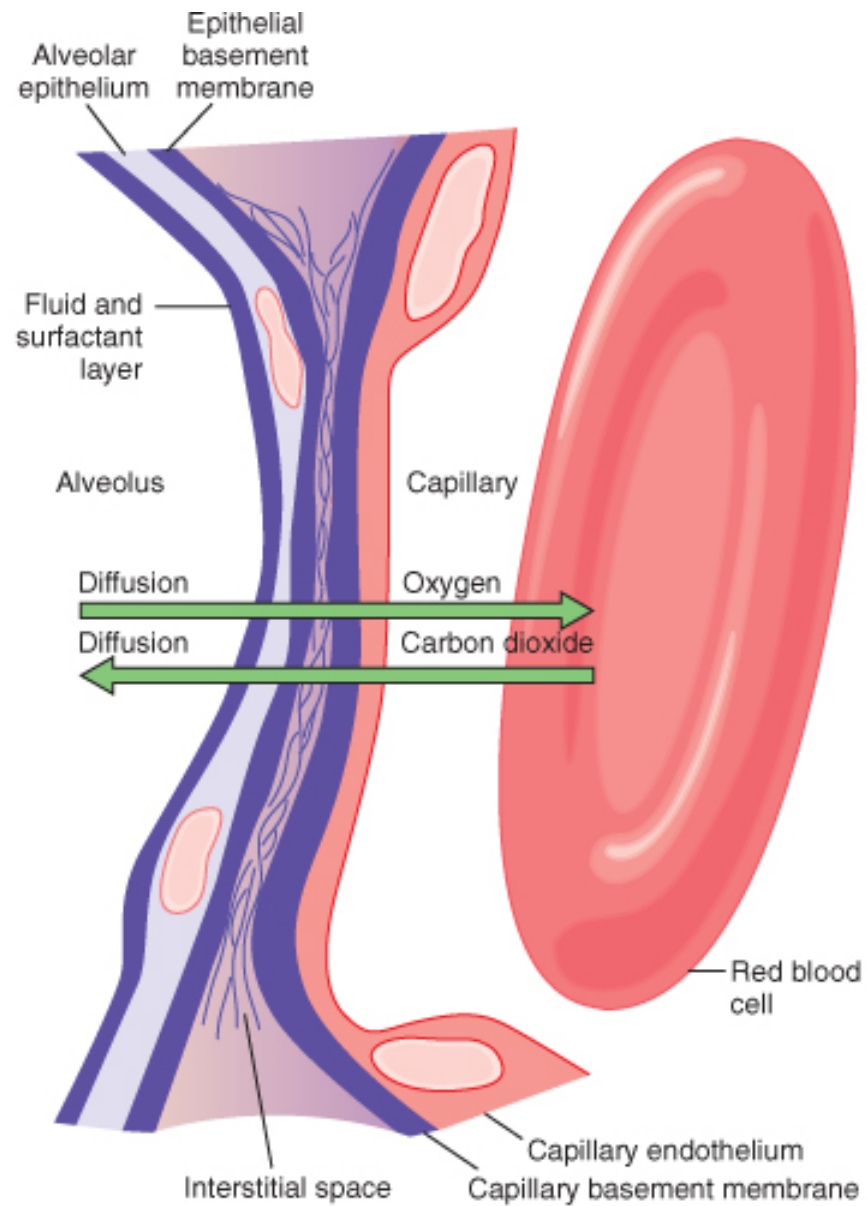
Tortor
a





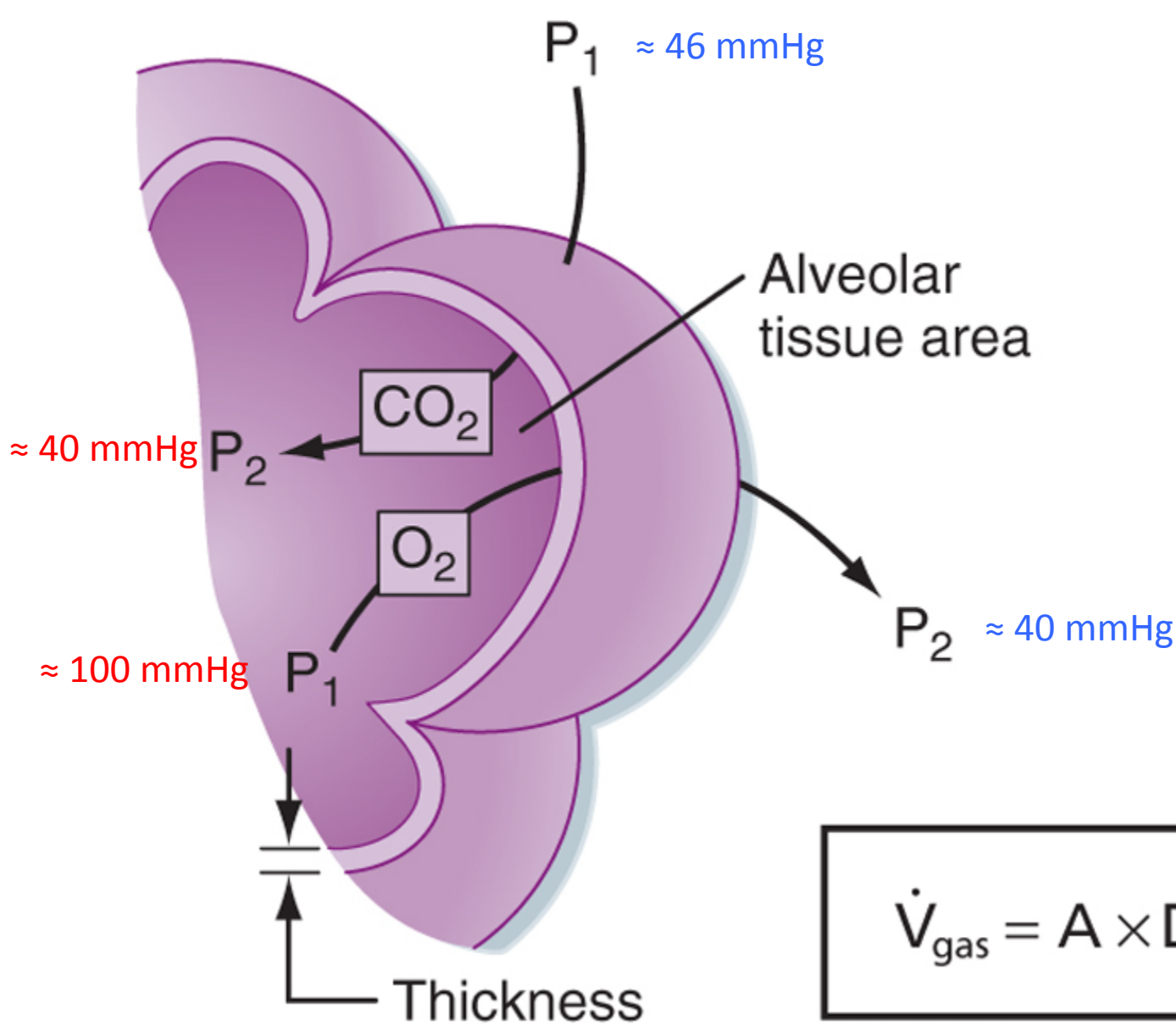
Koeppen & Stanton: Berne and Levy Physiology, 6th Edition.
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Figure 22-5 Cross section of an alveolar wall showing the path for diffusion of O₂ and CO₂. The thin side of the alveolar wall barrier (short double arrow) consists of type I epithelium (I), interstitium (*) formed by the fused basal laminae of the epithelial and endothelial cells, capillary endothelium (E), plasma in the alveolar capillary (C), and finally the cytoplasm of the red blood cell (R). The thick side of the gas exchange barrier (long double arrow) has an accumulation of elastin (EL), collagen (COL), and matrix that jointly separate the alveolar epithelium from the alveolar capillary endothelium. As long as the red blood cells are flowing, O₂ and CO₂ diffusion probably occurs across both sides of the air-blood barrier. A, alveolus; Nu, nucleus of the capillary endothelial cell.



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Figure 39-9 Ultrastructure of the alveolar respiratory membrane, shown in cross section.



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Figure 23-2 Fick's law states that diffusion of a gas across a sheet of tissue is directly related to the surface area of the tissue, the diffusion constant of the specific gas, the partial pressure difference of the gas on each side of the tissue and is inversely related to tissue thickness.

END

Video 1, Module 13