

GAS EXCHANGE FUNDAMENTAL CONCEPTS

1. Organisms need to take oxygen gas into their cells and to excrete carbon dioxide gas from their cells in cellular respiration.
2. Gas exchange in all organisms occurs as diffusion across a membrane.
3. Gases must be dissolved in solution to diffuse across exchange membranes.
4. Water (for aquatic organisms) contains very little dissolved oxygen gas compared to air. **ADAPTATION—COUNTERCURRENT EXCHANGE**
5. Organisms on land deal with the constant tendency to lose water across exchange membranes.
6. Minimizing the surface area of exchange membranes would reduce water loss but would also decrease gas exchange efficiencies. To address this, most land animals developed internal exchange surfaces or modifications to the surface.