

3 Diffusion and osmosis – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
cell membrane	细胞膜	_____	_____	_____
Diffusion	扩散	_____	_____	_____
net movement	净移动	_____	_____	_____
higher concentra- tion	高浓度	_____	_____	_____
concentration gra- dient	浓度梯度	_____	_____	_____
oxygen	氧气	_____	_____	_____
carbon dioxide	二氧化碳	_____	_____	_____
surface area	表面积	_____	_____	_____
temperature	温度	_____	_____	_____
Osmosis	渗透	_____	_____	_____
partially perme- able membrane	半透膜	_____	_____	_____
solute	溶质	_____	_____	_____

Recall

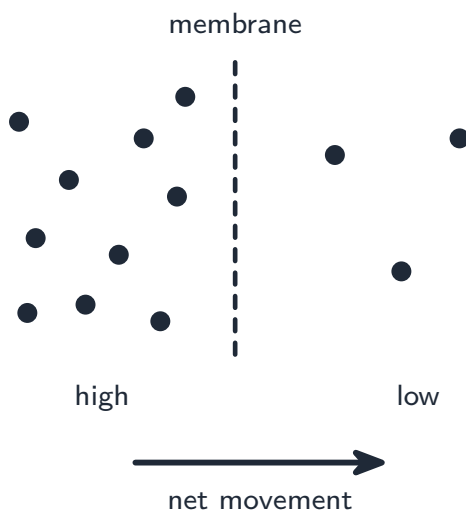
Substances move into and out of cells through the **cell membrane** 细胞膜, which controls what passes. Some movement needs no energy.

New ideas

Read these first, then do the Practice.

■ 1 Diffusion

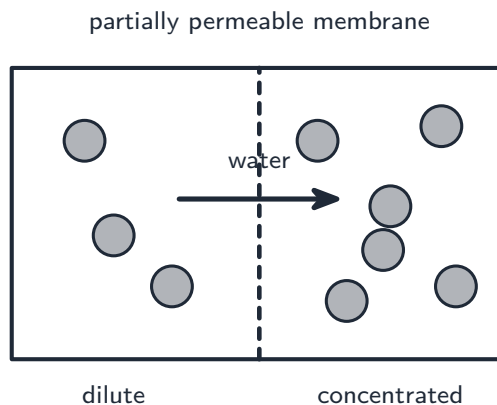
Diffusion 扩散 is the **net movement** 净移动 of particles from a **higher concentration** 高浓度 to a lower concentration — down the **concentration gradient** 浓度梯度. It needs **no** energy.



For example, **oxygen** 氧气 diffuses into cells and **carbon dioxide** 二氧化碳 diffuses out. Diffusion is faster with a larger **surface area** 表面积, a higher **temperature** 温度, a steeper gradient and a shorter distance.

■ 2 Osmosis

Osmosis 渗透 is a special kind of diffusion: the net movement of **water** across a **partially permeable membrane** 半透膜 (it lets small water molecules through but holds back larger **solute** 溶质 particles).



Water moves from a **dilute** solution (lots of water) to a **concentrated** solution (little water).

Watch out: **osmosis** moves *water only*, across a partially permeable membrane; **diffusion** moves any particle down its gradient. Water moves *to* the more **concentrated** solution (the side with less water).

Practice

Try these in order.

3.1 Define *diffusion*. [2]

3.2 Does diffusion need energy from respiration? [1]

3.3 Name two things that make diffusion faster. [2]

3.4 What is *osmosis*? [2]

3.5 In osmosis, does water move to the dilute or the concentrated solution? [1]

3.6 Challenge. A piece of potato is left in pure water and gains mass. Explain why, using osmosis. [2]