

Chapter 30 - Homeostasis

The external environment surrounds the outside of an organism.

The internal environment surrounds the cells in an organism.

Homeostasis:

- is the ability of an organism to maintain a constant internal environment
- involves many organs and organ systems acting together, co-ordinated by the brain
- often requires an organism to exchange materials with its environment

Temperature = 37°C

Blood pH = 7.4

Glucose = 0.1%

O₂, CO₂,
H₂O and
Urea

Endothermic - can control body temperature, e.g. humans

Ectothermic - can't control body temperature, e.g. frogs

Cells exchange materials with their environment by diffusion.

Special organs of exchange are not needed in small organisms because diffusion is adequate.

To improve their rate of exchange, large organisms require special features such as:

- flat structures
- a respiratory system with a large surface area
- respiratory and excretory systems, which take materials from within the body to the body surface

→ e.g. Leaves, Alveoli,

Large organisms require a circulatory system to carry materials over long distances.

Homeostasis allows:

- cells, and therefore organisms, to function at their most efficient rate
- organisms to function independently of external conditions
- slight changes in internal conditions when necessary