

Cells and Systems

This worksheet reviews how living things are organized into cells, tissues, organs and systems, and how these systems keep the body working in a healthy, balanced way ([Topic](#), [Outcome](#)). It also checks your understanding of cell structure, diffusion and the role of scientific research in improving human health ([Outcome](#), [Outcome](#)).

Exercises

1. Matching: Cell structures

Match each structure on the left with its correct description on the right. Write the matching letter in the blank.

Structure	Blank	Description
Cell wall	_____	A) Controls what enters and leaves the cell; found in both plant and animal cells
Cell membrane	_____	B) Rigid outer layer found only in plant cells, gives support and shape
Nucleus	_____	C) Small structure that directs the cell's activities and stores genetic information

2. Fill in the blanks: Diffusion and osmosis

Use the words below to complete the sentences. Each word is used once.
concentration, diffusion, osmosis, membrane

- a) The movement of water molecules across a cell _____ is called _____.
- b) The general movement of gases or dissolved substances from an area of high _____ to an area of low concentration is called _____.

3. Multiple choice: Body systems

Circle the letter of the best answer.

- i) Which body system is mainly responsible for exchanging oxygen and carbon dioxide? ([Outcome](#))
A) Digestive system
B) Respiratory system
C) Excretory system
D) Sensory system
- ii) A person's heart rate increases during exercise. This is an example of: ([Outcome](#))
A) A single-celled organism responding to light
B) A change in body function in response to a changing condition
C) A structure common to all animals
D) A scientific study of a local organism
- iii) Which best describes the role of research into human cells and organs? ([Outcome](#))
A) It has no effect on medicine or health
B) It only studies plants, not animals
C) It has led to improvements such as new medicines and immunization procedures
D) It replaces the need for healthy body systems

4. Short answer: Single-celled vs. multicelled organisms

Choose one single-celled organism and one multicelled organism (for example, an amoeba and a grizzly bear, or a single-celled alga and a poplar tree). Describe one similarity and one difference between how they carry out life functions. ([Outcome](#))

Similarity: _____

Difference: _____

5. Table completion: Organs and their roles

Fill in the missing organ or role for each body system. ([Outcome](#))

Body system	Organ or tissue	Role
Respiratory	Lungs	_____ _____
Circulatory	_____	Pumps blood to carry oxygen and nutrients throughout the body
Digestive	Stomach	_____ _____

6. Short answer: Research question

Scientists investigate factors that affect the healthy function of body systems, such as the effect of air quality on the respiratory system. ([Outcome](#))

Write one testable question you could investigate about a factor that affects the healthy function of a human body system. ([Outcome](#))

Question: _____

Why is this question testable? _____

Answer key

1. Cell wall, B; Cell membrane, A; Nucleus, C
2. a) membrane, osmosis b) concentration, diffusion
3. i) B ii) B iii) C
4. Answers will vary; accept any reasonable comparison showing both organisms perform similar life functions (e.g., obtaining food, responding to environment) but differ in structure and complexity (e.g., one cell vs. many specialized cells).
5. Lungs, exchanges oxygen and carbon dioxide; Circulatory organ, heart; Stomach, breaks down food as part of digestion
6. Answers will vary; accept any question that names one variable affecting a specific body system and can be tested through observation or investigation (e.g., "How does exercise affect breathing rate?"), with a brief explanation of why it can be measured or observed.