

SCIENCE • CLASS 9

CHAPTER 12

Patterns in Life

Diversity and Classification

NCERT SOLUTIONS



COMMON ANCESTRY & GENETIC EVIDENCE

Pause and Ponder • Q1

If many organisms share common features, could they also share a common ancestry?

Answer: Yes. Shared inherited features can suggest descent from a common ancestor.

- Scientists compare body structures, cells and DNA.
- One similar feature alone is not enough: unrelated organisms may develop similar adaptations.

Pause and Ponder • Q9

Why do genetic studies provide deep information about living beings?

Answer: DNA carries inherited information that guides cell structure and function.

- Comparing DNA reveals similarities and differences hidden by outward appearance.
- It helps identify organisms and infer evolutionary relationships.
- DNA evidence is considered together with other biological features.

LIFE PROCESSES IN ONE CELL

Pause and Ponder • Q2

Q: How can a single-celled organism perform all life processes when multicellular organisms like us have billions of cells?

Answer: A single cell is a complete living unit.

- Its membrane exchanges substances with its surroundings.
- Cell structures and chemical reactions carry out nutrition, respiration, waste removal, growth and reproduction.
- In unicellular eukaryotes, organelles divide these jobs within one cell.

Why do we have many cells?

Our bodies are large and complex. Specialised cells form tissues and organs and share the work.

Each living cell still performs its own basic cell processes. Billions of cells are not needed to keep one tiny cell alive.

PLANTS, WATER & TRANSPORT

Pause and Ponder • Q3

Which plant features reduce dependence on water but still require moist conditions?

Answer: Pteridophytes have true roots, stems and leaves, with vascular tissues.

- Roots absorb water; xylem and phloem move materials through the plant.
- These features support life on land.
- A film of water is still needed for male reproductive cells to reach the egg during fertilisation.

Pause and Ponder • Q4

Why do taller plants need specialised transport tissues?

Answer: Diffusion alone is too slow over long distances.

- Xylem transports water and minerals from roots.
- Phloem carries food from leaves to parts that need or store it.
- Strengthened vascular tissues also help support the plant.

SEEDS, FRUITS & SURVIVAL

Pause and Ponder • Q5

How do seeds and fruits affect where and how plants can survive?

Answer:

- A seed coat protects the embryo.
- Stored food supports early growth before the seedling makes enough food.
- Many seeds remain dormant through unfavourable conditions.
- Fruits protect enclosed seeds and help their dispersal.
- Wind, water or animals can carry suitable seeds or fruits away from the parent plant.

This reduces competition for light, water, minerals and space, and helps plants reach new habitats.

Seeds germinate only when suitable conditions are available.

These features widen opportunities for survival; they do not allow every plant to survive everywhere.



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