Specialised cells and stem cells

Teacher / technician

YEAR 10 / LESSON 6 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Microscopy plus reference-model discussion. Do not label organelles that cannot be resolved. Stem-cell evaluation is an educational discussion, not clinical advice.

Coverage and delivery

Shared: 2.1 organisation. Biology-only extension: 2.5B–2.6B differentiation and stem cells.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Microscopes	1 per pair	15
Permanent slide sets	1 per pair	15 sets
Student booklets	1 per learner	30

Immediate safety

Carry microscopes with two hands. Handle glass slides by the edges; report cracks and breakages. Keep lenses clear of the slide and use fine focus at high power.

Preparation and delivery

Read alongside the student method

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1. Check 15 microscopes and prepared root/leaf/animal tissue slides. Confirm at least one useful field for each station before class.

2. Use the supplied profiles if a specialist slide is unavailable, and label that work as reference-based. Provide no live animal or human material.

3. Keep the stem-cell extension clearly marked Biology only; the organisation sequence is shared core.

Close of lesson

- Return equipment and wash hands after practical work.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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• ×400.

• It provides a wider field, making the specimen easier to locate and reducing the risk of striking the slide.

• A visible cell boundary is an observation; its role in exchange is an interpretation using biological knowledge.

• Organelle → cell → tissue → organ → organ system.

• Cells develop specialised structures and functions through different patterns of gene expression.

• Potential repair of damaged tissue; concerns include rejection, uncontrolled division and ethical issues relating to embryo use.

References and provenance

Pearson Biology specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.