Cloning and transgenic animals

Teacher / technician

YEAR 11 / LESSON 96 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Original learning tasks; no supplied numerical example represents class measurements.

Coverage and delivery

Shared recap: 5.12–5.16 genetic engineering. Biology-only extension: 5.19B–5.20B mammalian cloning and human-protein production.

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
Student booklets	1 per learner	30
Nuclear-transfer and gene-transfer process cards	1 set per pair	15 sets
Rulers	1 per pair	15

Immediate safety

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Preparation and delivery

Read alongside the student method

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1. Provide 30 booklets, 15 rulers and 15 sets of nuclear-transfer and gene-transfer process cards.

2. Keep answers separate until learners have attempted the tasks; discuss the reasons for corrections.

3. Use separate cards for nucleus donor, egg donor and surrogate; keep the detailed cloning sequence marked Biology-only.

Close of lesson

• Return models and keep the corrected 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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- No.
- An organism carrying transferred genetic material from a different species in the course definition.
- A diploid nucleus from a mature body cell.
- To avoid retaining an additional nuclear chromosome set.
- No; it supports development.
- To establish identity, purity, activity and suitability rather than administering an unprocessed animal product.

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.