Eukaryotes: compare the evidence

Student activity • observation and reasoning

YEAR 10 / LESSON 3 / BIOLOGY + SCIENCE (DOUBLE AWARD)

The question

Which combination of features supports a classification?

Compare written organism profiles and cell models. Use structure and nutrition together; colony appearance does not identify an organism.

Equipment

- Student booklet, pencil, ruler and coloured pencils
- Blank paper cards or reusable modelling pieces

Use paper or clean reusable models. No body samples, microbial cultures or unknown biological material are handled.

Course coverage: Shared Biology / Double Award: 1.2. Plants, animals, fungi and protoctists.

Plan, model or apparatus sketch

Draw a labelled model that explains the evidence; state what the model cannot show.

Method and reasoning

Read the whole sequence before starting

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1. Make four headings: plants, animals, fungi and protoctists. Define eukaryotic in terms of a membrane-bound nucleus.

2. Classify maize: multicellular, cellulose walls, photosynthetic tissues and starch storage.

3. Classify a housefly: multicellular, no cell walls, feeding on organic material and nervous coordination.

4. Compare yeast and Mucor: both fungi; yeast is unicellular while Mucor forms hyphae and mycelium.

5. Compare Amoeba, Chlorella and Plasmodium as the protoctist examples in this course; explain why nutrition alone does not define the whole group.

6. Write two-feature justifications. Explain why colour or shape of a colony would not establish its species or whether it causes disease.

Cleanup

- Return reusable materials and retain your corrected reasoning.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Written profiles: maize has photosynthetic tissues and cellulose walls; housefly lacks walls; yeast is a unicellular fungus; Mucor grows as hyphae; Amoeba feeds on organic material; Chlorella photosynthesises; Plasmodium is a parasitic protoctist. Fungi have chitin walls and digest material outside cells before absorbing soluble products. No agar culture is part of this activity.

Example / task	Evidence / drawing	Reason / limitation
Plants / animals		
Yeast / Mucor		
Protoctist comparison		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. What makes a cell eukaryotic?

2. How do fungal and plant cell walls differ?

3. Explain saprotrophic nutrition.

4. Why is yeast a fungus despite being unicellular?

5. Give two contrasting protoctist examples.

6. Can colony appearance prove species identity or pathogenicity?