

Cornell Guided Notes

Biotechnology for Health (Biomedical Innovations) | 2027-04-21

Name

Period

Date

Lesson

Lesson focus

Transformation notes

Key words and questions

Prepared details and student notes

Essential question
What is today's target?

Explain bacterial transformation and how antibiotic selection identifies successful clones.
Big idea: Antibiotic selection makes transformation results visible by killing non-transformed cells.

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- transformation
- selection
- colony
- digest
- gel electrophoresis
- DNA ladder

My notes, examples, and questions

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Cornell Notes - Continued

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Must-know ideas

What should I understand by the end?

- Competent cells have weakened membranes that allow plasmid DNA to enter during heat shock.
- The heat-shock protocol raises temperature briefly (42 degrees C) to drive DNA uptake, then cools to prevent cell death.
- Only cells that took up the resistance plasmid survive on antibiotic agar; non-transformed cells die.

My notes, examples, and questions

Process notes

What happens during class?

- 0-5 min: Warm-up: what does it mean for a bacterial cell to be competent?
- 5-20 min: Define transformation, competent cells, and heat shock in your notes
- 20-40 min: Diagram the heat-shock temperature profile and explain each temperature step
- 40-55 min: Explain antibiotic selection; predict colony growth for each plate condition
- 55-70 min: Write expected results for positive control, negative control, and experimental plates
- 70-80 min: Exit ticket: predict one specific plate result with a one-sentence justification

My notes, examples, and questions

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Steps and evidence What do I do and turn in?

- Define transformation and competent cells.
- Describe the heat-shock steps that drive plasmid uptake.
- Explain how an antibiotic-resistance gene enables selection.
- Predict which plate condition yields colonies and which does not.
- Write the expected result for each control plate.

Evidence: Pre-lab - Transformation notes with definitions, heat-shock temperature diagram, antibiotic selection explanation, and predicted colony results for each control and experimental plate with justifications.

My notes, examples, and questions

Checks for understanding How do I know I got it?

- You explained transformation and antibiotic selection.
- You predicted colony growth across control plates.

My notes, examples, and questions

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Lab or safety notes
What must I handle carefully?

Supplies:

- Provided transformation plate images
- Gel electrophoresis chamber and power supply
- Agarose gel
- DNA ladder standard
- Restriction digest samples
- Micropipettes and tips
- Gel staining and imaging setup

My notes, examples, and questions

Summary

Today's lesson focused on Transformation notes. The main target was: Explain bacterial transformation and how antibiotic selection identifies successful clones. The evidence of learning is Pre-lab: Transformation notes with definitions, heat-shock temperature diagram, antibiotic selection explanation, and predicted colony results for each control and experimental plate with justifications.. In my own words, the most important idea from today is:

My summary

My final question or connection