

Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-03-09

Name

Period

Date

Lesson

Lesson focus

Vaccine and disease-model lab

Key words and questions

Prepared details and student notes

Essential question
What is today's target?

Model how a vaccine triggers adaptive immunity and use disease-spread data to test a simple outbreak prediction. Big idea: How does the body's memory of a pathogen stop an outbreak before it starts?

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- cochlea
- hair cell
- audiogram
- vaccine
- herd immunity
- adaptive immunity

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?

- Adaptive immunity produces antigen-specific antibodies and long-lived memory B and T cells on first exposure.
- A vaccine delivers antigen without disease, priming memory cells so the secondary response is faster and stronger.
- Herd immunity depends on the fraction vaccinated exceeding the threshold derived from R-zero.

My notes, examples, and questions

Process notes
What happens during class?

- 0-5: Hook curves and safety review for dataset work
- 5-20: Draw and label adaptive immune response: antigen in, antibody and memory cell out
- 20-40: Open disease-model dataset; identify columns; run two vaccination-rate scenarios
- 40-55: Record new-infection counts in data table; calculate difference between rates
- 55-70: Write comparison sentence; connect molecular diagram to population curve
- 70-80: Save all three artifacts to course shell; teacher debrief

My notes, examples, and questions

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Steps and evidence What do I do and turn in?

- Diagram the adaptive immune response: antigen, antibody, and memory cell, labeling each step.
- Open the disease-model dataset in the shell and identify the columns for infected, recovered, and vaccinated.
- Run the model at two vaccination rates and record new infections at each rate in a data table.
- Write one sentence comparing how the antibody response and the population data each slow disease spread.
- Save your diagram, data table, and comparison sentence as your lab evidence.

Evidence: Lab report - Adaptive immunity diagram, two-scenario disease-model data table, and one comparison sentence.

My notes, examples, and questions

Checks for understanding How do I know I got it?

- You'll be able to trace how a vaccine produces antibodies and memory cells.
- You'll be able to use model data to compare outbreak outcomes at different vaccination rates.

My notes, examples, and questions

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Lab or safety notes
What must I handle carefully?

Safety:

- No wet lab materials today; all work is computational and diagrammatic.
- Dataset is anonymized class-aggregate; do not enter or share any personal health information.
- If the simulation software requires a login, use only your school account credentials.

Supplies:

- Printed or projected blank immune-response diagram template
- Colored pencils or markers (at least two colors for antibody vs. memory cell)
- Access to disease-model dataset in course shell (computer or tablet per student)
- Printed or digital data-table template for recording infection counts

My notes, examples, and questions

Summary

Today's lesson focused on Vaccine and disease-model lab. The main target was: Model how a vaccine triggers adaptive immunity and use disease-spread data to test a simple outbreak prediction. The evidence of learning is Lab report: Adaptive immunity diagram, two-scenario disease-model data table, and one comparison sentence.. In my own words, the most important idea from today is:

My summary

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My final question or connection