

Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2026-09-08

Name

Period

Date

Lesson

Lesson focus

BLAST computer lab

Key words and questions

Prepared details and student notes

Essential question
What is today's target?

Use nucleotide BLAST to compare an unknown DNA sequence against a database and read the hit table. Big idea: How does comparing a DNA sequence to a database of known sequences reveal the identity of an unknown organism?

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- DNA sequence
- PCR
- Sanger sequencing
- BLAST
- E-value
- query coverage
- control

My notes, examples, and questions

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Must-know ideas
What should I understand by the end?

- BLAST (Basic Local Alignment Search Tool) aligns a query sequence against millions of known sequences and returns the closest matches.
- The hit table shows organism name, percent identity, and E-value; the top hit with the highest identity and lowest E-value is the best match.
- Running a known control sequence confirms the tool and your workflow are working correctly before trusting an unknown result.

My notes, examples, and questions

Process notes
What happens during class?

- 0-8 min: Open NCBI BLAST; review the interface and identify the query box, database selector, and results area
- 8-20 min: Copy unknown sequence from case file into a scratch doc; paste into BLAST query box and run search
- 20-35 min: Read the hit table: find top organism name and percent identity; screenshot and save to portfolio folder
- 35-50 min: Run the teacher-provided control sequence; compare results to expected organism to validate workflow
- 50-65 min: Write one sentence naming the likely organism and citing the percent identity as evidence
- 65-80 min: Share results with a partner; compare top hits and discuss any discrepancies

My notes, examples, and questions

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Steps and evidence What do I do and turn in?

- Copy the unknown DNA sequence from the case file into a scratch document so you do not lose it.
- Go to NCBI BLAST, choose nucleotide BLAST, and paste your sequence into the query box.
- Run the search, then read the top hit's organism name and percent identity.
- Take a screenshot of the hit table for your portfolio.
- Run a control sequence the teacher provides to confirm the workflow behaves.
- Write one sentence naming the likely organism and the evidence behind it.

Evidence: Lab report - BLAST hit table screenshot with top organism name and percent identity annotated; one-sentence identification statement; control run result.

My notes, examples, and questions

Checks for understanding How do I know I got it?

- You will be able to run a nucleotide BLAST search.
- You will be able to read an organism name and percent identity from a hit table.
- You will be able to use a control to check your workflow.

My notes, examples, and questions

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Cornell Notes - Continued

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Lab or safety notes
What must I handle carefully?

Safety:

- No biological materials in this session; standard computer lab rules apply.
- Remind students not to close the BLAST results page before screenshotting; use Ctrl+S or Cmd+Shift+4 to capture.
- Students should save the screenshot immediately to a portfolio folder, not just the desktop.

Supplies:

- Student computers or tablets with internet access (one per student or per pair)
- Printed or digital case file with the unknown DNA sequence
- Teacher-provided control sequence (known organism)
- Screenshot or snipping tool accessible on student devices
- Notebook and pen for written identification sentence

My notes, examples, and questions

Summary

Today's lesson focused on BLAST computer lab. The main target was: Use nucleotide BLAST to compare an unknown DNA sequence against a database and read the hit table. The evidence of learning is Lab report: BLAST hit table screenshot with top organism name and percent identity annotated; one-sentence identification statement; control run result.. In my own words, the most important idea from today is:

My summary

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My final question or connection