

# Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-02-01

Name

Period

Date

Lesson

## Lesson focus

DNA sequencing basics

## Key words and questions

## Prepared details and student notes

**Essential question**  
**What is today's target?**

Explain how DNA sequencing reads the order of bases and why that sequence can act as a fingerprint for an organism. Big idea: How does reading the order of DNA bases let scientists identify an organism they have never seen before?

**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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## Cornell Notes - Continued

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

- DNA is made of four nucleotide bases: adenine (A), thymine (T), cytosine (C), and guanine (G); sequencing reads their exact order.
- Organisms differ in their DNA sequence, so comparing a read from an unknown sample to a database can identify the species.
- Molecular identification is faster and more precise than traditional culture-based methods for many pathogens.

**My notes, examples, and questions**

**Process notes**  
**What happens during class?**

- 0-10 min: Activate prior knowledge: write four bases, base-pairing rules, and double-helix structure from memory
- 10-25 min: Read the sequencing overview; summarize the process in two sentences in your notebook
- 25-40 min: Explain in writing why two organisms have different sequences; connect to mutation and evolution
- 40-55 min: Examine a sample nucleotide read; confirm it uses only A, T, C, G and has no obvious errors
- 55-70 min: Predict why a unique sequence identifies an unknown pathogen; compare with a partner
- 70-80 min: Write one open question about BLAST and post it for tomorrow's lab context

**My notes, examples, and questions**

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#### Steps and evidence What do I do and turn in?

- Write what you already know about DNA's four bases and how they pair.
- Read the short overview of how sequencing reads base order, then summarize it in two sentences.
- Explain in writing why two organisms have different DNA sequences.
- Look at a sample read and confirm it uses only A, T, C, and G.
- Predict why a unique sequence could identify an unknown pathogen.
- Write one question you have about turning a sequence into an identification.

Evidence: Vocabulary task - Notebook entry: four DNA bases with pairing rules, two-sentence sequencing summary, and one question for the BLAST lab.

#### My notes, examples, and questions

#### Checks for understanding How do I know I got it?

- You will be able to explain what DNA sequencing measures.
- You will be able to describe why a sequence can identify an organism.
- You will be able to recognize a valid nucleotide read.

#### My notes, examples, and questions

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**Lab or safety notes**  
**What must I handle carefully?**

Supplies:

- Lab computers with internet access
- NCBI BLAST nucleotide tool
- Unknown pathogen DNA sequence file
- Known control sequence file
- Shared results spreadsheet
- Screenshot tool

**My notes, examples, and questions**

### Summary

Today's lesson focused on DNA sequencing basics. The main target was: Explain how DNA sequencing reads the order of bases and why that sequence can act as a fingerprint for an organism. The evidence of learning is Vocabulary task: Notebook entry: four DNA bases with pairing rules, two-sentence sequencing summary, and one question for the BLAST lab.. In my own words, the most important idea from today is:

**My summary**

### My final question or connection