Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2026-11-20

Name	Period	Date	Lesson
		2026-11-20	

Lesson focus

Plasmids and enzymes

Key words and questions	Prepared details and student notes

Essential question
What is today's target?

Explain how plasmids, restriction enzymes, and ligase work together to build recombinant DNA. Big idea: Restriction enzymes and ligase are the molecular scissors and glue that make recombinant DNA possible.

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- plasmid
- recombinant DNA
- ligase
- transformation
- expression

My notes, examples, and questions

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Cornell Notes - Continued

Key words and questions	Prepared details and student notes
Must-know ideas **What should I understand by the end?**	- Restriction enzymes recognize short palindromic sequences and cut both DNA strands, leaving sticky ends. - Sticky ends are complementary single-stranded overhangs that base-pair with a matching cut fragment. - Ligase covalently seals the phosphodiester backbone after the gene is annealed into the plasmid. **My notes, examples, and questions**
Process notes **What happens during class?**	- 0-10: Read cloning-tools notes; define three vocabulary terms in margin - 10-28: Diagram restriction enzyme cutting plasmid and gene at matching sites - 28-45: Add ligase step; show recombinant DNA forming - 45-58: Annotate sticky ends and explain directionality - 58-72: Finalize and label diagram - 72-80: Submit to tracker; preview Wednesday transformation lab **My notes, examples, and questions**

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Steps and evidence **What do I do and turn in?**	- Read the cloning-tools notes in the PLTW course shell and define plasmid, restriction enzyme, and ligase. - Diagram a restriction enzyme cutting a plasmid and a gene at matching sites. - Show how ligase joins the gene into the open plasmid to form recombinant DNA. - Explain why sticky ends help the gene insert in the right place. - Submit a labeled cloning-tools diagram as PLTW tracker evidence. Evidence: Notebook check - Labeled cloning-tools diagram showing restriction enzyme cuts, sticky ends, gene insertion, and ligase sealing to form recombinant DNA. **My notes, examples, and questions**
Checks for understanding **How do I know I got it?**	- You'll be able to define plasmid, restriction enzyme, and ligase. - You'll be able to explain how a gene is inserted into a plasmid. **My notes, examples, and questions**

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Lab or safety notes
What must I handle carefully?

Supplies:
- Plasmid and gene-insert models or DNA simulation kit
- Restriction enzyme and ligase reagents or model cards
- Micropipette and tips
- Host cell transformation simulation materials
- Selection plate reference handout
- Safety goggles and nitrile gloves

My notes, examples, and questions

Summary

Today's lesson focused on Plasmids and enzymes. The main target was: Explain how plasmids, restriction enzymes, and ligase work together to build recombinant DNA. The evidence of learning is Notebook check: Labeled cloning-tools diagram showing restriction enzyme cuts, sticky ends, gene insertion, and ligase sealing to form recombinant DNA.. In my own words, the most important idea from today is:

My summary

My final question or connection