Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-04-26

Name	Period	Date	Lesson
		2027-04-26	

Lesson focus

Protein expression

Key words and questions	Prepared details and student notes
Essential question **What is today's target?**	Explain how a host cell expresses the inserted gene to produce the target protein. Big idea: Gene expression turns an inserted DNA sequence into a functional protein, and every step is a potential control point. **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?**	- Expression requires the inserted gene to have a promoter the host cell recognizes. - Temperature, nutrient availability, and inducer concentration each affect mRNA and protein yield. - GFP fluorescence or enzyme activity is used as a visible proxy for successful expression. **My notes, examples, and questions**
Process notes **What happens during class?**	- 0-10: Read expression notes; define expression in own words - 10-28: Trace transcription of inserted gene; annotate promoter role - 28-45: Trace translation; annotate ribosome reading human mRNA in bacteria - 45-58: List two growth conditions that affect yield; explain mechanism - 58-70: Identify expression evidence in sample data; write one sign - 70-80: Add notes to tracker; preview Friday quiz topics **My notes, examples, and questions**

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Steps and evidence **What do I do and turn in?**	- Read the expression notes in the PLTW course shell and define expression. - Trace transcription and translation of the inserted gene in the host cell. - Explain why growth conditions can raise or lower how much protein is made. - Identify one sign that expression worked in the sample data. - Add your expression notes to your Unit 4 PLTW tracker evidence. Evidence: Notebook check - Annotated notes tracing transcription and translation of the inserted gene, two yield-affecting conditions, and one piece of expression evidence from sample data. **My notes, examples, and questions**
Checks for understanding **How do I know I got it?**	- You'll be able to describe how a host cell expresses an inserted gene. - You'll be able to name a condition that changes protein yield. **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 Protein expression. The main target was: Explain how a host cell expresses the inserted gene to produce the target protein. The evidence of learning is Notebook check: Annotated notes tracing transcription and translation of the inserted gene, two yield-affecting conditions, and one piece of expression evidence from sample data.. In my own words, the most important idea from today is:

My summary

My final question or connection