Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-03-22

Name	Period	Date	Lesson
		2027-03-22	

Lesson focus

Microarray introduction

Key words and questions	Prepared details and student notes
Essential question **What is today's target?**	Explain how a microarray uses hybridization to test many genes at once and where it differs from PCR. Big idea: How does a chip the size of a postage stamp test thousands of genes simultaneously? **My notes, examples, and questions**
Key words **What vocabulary unlocks the lesson?**	- primer - restriction enzyme - gel electrophoresis - microarray - hybridization - marker **My notes, examples, and questions**

Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-03-22

Cornell Notes - Continued

Key words and questions	Prepared details and student notes
Must-know ideas **What should I understand by the end?**	- Microarray hybridization: fluorescently labeled cDNA from a sample binds to complementary probe sequences on the chip; fluorescence indicates which genes are expressed. - A bright spot means the gene is expressed (mRNA present in sample); a dark spot means little or no expression. - Microarrays survey thousands of genes at once but require specialized equipment and bioinformatics; PCR is targeted and gel is the readout, not a scanner. **My notes, examples, and questions**
Process notes **What happens during class?**	- 0-8: Hook: microarray image; introduce hybridization concept - 8-25: Define hybridization; explain spot color as expression signal - 25-50: Build comparison table: PCR, gel, microarray (purpose, scale, limit, output) - 50-65: Write one limit of microarrays not shared by PCR or gel - 65-75: Partner quiz: cover one column; name the method from description - 75-80: Submit comparison table to course shell; review for Friday quiz **My notes, examples, and questions**

Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-03-22

Cornell Notes - Continued

Key words and questions	Prepared details and student notes
Steps and evidence **What do I do and turn in?**	- Define hybridization and explain how a labeled sample binds to spots on a microarray. - Describe what a colored spot versus a dark spot tells you about a gene. - Compare in one row each: PCR, gel, and microarray, listing what each method is best for. - Write one limit of microarrays that gel or PCR does not share. - Submit your method comparison as your daily evidence. Evidence: Vocabulary task - Three-row method comparison table (PCR, gel, microarray) plus one sentence on a microarray limit not shared by the other two methods. **My notes, examples, and questions**
Checks for understanding **How do I know I got it?**	- You'll be able to explain how a microarray reads many genes by hybridization. - You'll be able to compare PCR, gel, and microarray by purpose and limit. **My notes, examples, and questions**

Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-03-22

Cornell Notes - Continued

Key words and questions	Prepared details and student notes
Lab or safety notes **What must I handle carefully?**	Supplies: - Agarose gel and casting tray - Gel electrophoresis chamber with power supply - Micropipette and tips - Loading dye and DNA size ladder - TAE or TBE running buffer - Safety goggles and nitrile gloves **My notes, examples, and questions**

Summary

Today's lesson focused on Microarray introduction. The main target was: Explain how a microarray uses hybridization to test many genes at once and where it differs from PCR. The evidence of learning is Vocabulary task: Three-row method comparison table (PCR, gel, microarray) plus one sentence on a microarray limit not shared by the other two methods.. In my own words, the most important idea from today is:

My summary

My final question or connection