Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-03-25

Name	Period	Date	Lesson
		2027-03-25	

Lesson focus

Heat-map claim

Key words and questions	Prepared details and student notes

Essential question
What is today's target?

Read a microarray heat map and write a claim that separates disease risk from disease diagnosis. Big idea: How does a color-coded grid of gene activity translate into a patient's disease risk versus a confirmed diagnosis?

My notes, examples, and questions

Key words
What vocabulary unlocks the lesson?

- gene expression
- mRNA
- upregulated
- downregulated
- correlation
- risk
- diagnosis

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?**	- A heat map encodes fold-change magnitude as color intensity; clustering similar patterns reveals co-regulated gene groups. - A risk indicator shows an elevated probability of disease; a diagnosis requires clinical confirmation beyond expression data alone. - CER claims from data should be falsifiable: if the expression pattern reversed, what would that mean for your claim? **My notes, examples, and questions**
Process notes **What happens during class?**	- 0-8: Hook heat maps; review risk vs. diagnosis distinction - 8-25: Shade fold-change values from Wednesday into heat map grid (high = one color, low = another) - 25-45: Identify the gene cluster with the greatest diseased-vs.-healthy difference - 45-60: Write CER claim using two specific fold-change values as evidence - 60-72: Add risk-vs.-diagnosis sentence; peer check for accuracy - 72-80: Submit heat map and claim to course shell; preview Friday report **My notes, examples, and questions**

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Cornell Notes - Continued

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Steps and evidence **What do I do and turn in?**	- Shade your fold-change values from Wednesday into a small heat map, high values one color and low another. - Identify the cluster of genes that differs most between diseased and healthy samples. - Write a CER claim about what the pattern suggests, with two values as evidence. - Add one sentence explaining why this pattern shows risk, not a confirmed diagnosis. - Submit your heat map and claim as your daily evidence. Evidence: CER - Shaded heat map of four genes and a CER claim (claim, two fold-change values as evidence, reasoning) that distinguishes risk from diagnosis. **My notes, examples, and questions**
Checks for understanding **How do I know I got it?**	- You'll be able to read clusters on a heat map. - You'll be able to distinguish risk from diagnosis in your claim. **My notes, examples, and questions**

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Cornell Notes - Continued

Key words and questions | **Prepared details and student notes**

Lab or safety notes
What must I handle carefully?

Supplies:
- Classroom computer or laptop
- Spreadsheet software (Google Sheets or Excel)
- Teacher microarray expression dataset
- Heat-map color key handout
- Calculator or spreadsheet formula bar

My notes, examples, and questions

Summary

Today's lesson focused on Heat-map claim. The main target was: Read a microarray heat map and write a claim that separates disease risk from disease diagnosis. The evidence of learning is CER: Shaded heat map of four genes and a CER claim (claim, two fold-change values as evidence, reasoning) that distinguishes risk from diagnosis.. In my own words, the most important idea from today is:

My summary

My final question or connection