

# Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-04-08

Name

Period

Date

Lesson

## Lesson focus

CRISPR and reproductive screening

## Key words and questions

## Prepared details and student notes

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

Explain how CRISPR-Cas9 edits DNA, including off-target risk, and apply it to a reproductive screening case. Big idea: How precise does a molecular scissors need to be before it is safe enough to use on a human embryo?

**My notes, examples, and questions**

**Key words**  
**What vocabulary unlocks the lesson?**

- gene therapy
- vector
- CRISPR-Cas9
- somatic
- germline
- off-target
- informed consent

**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?**

- CRISPR-Cas9 uses a guide RNA to direct the Cas9 endonuclease to a specific genomic address; Cas9 cuts both DNA strands.
- The cell repairs the cut via NHEJ (often creating insertions/deletions) or HDR (if a repair template is supplied); HDR enables precise edits.
- Off-target edits occur when the guide RNA matches non-target sequences well enough to direct a cut; this can disrupt tumor-suppressor genes or other critical loci.

**My notes, examples, and questions**

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

- 0-8: Hook headlines; introduce guide RNA, Cas9, and repair as three discrete steps
- 8-30: Annotate CRISPR article: mark guide RNA, Cas9 cut, repair step; define off-target in margin
- 30-45: Read reproductive screening case; note what CRISPR could and could not ethically do
- 45-62: Write CER claim about using CRISPR in this case with two evidences
- 62-75: Peer review: check that reasoning names one CRISPR limit
- 75-80: Submit annotation and CER; preview Friday ethics synthesis

**My notes, examples, and questions**

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

- Annotate the assigned CRISPR article, marking the guide RNA, the Cas9 cut, and the repair step.
- Define off-target editing and explain in one line why it is a safety concern.
- Read the reproductive screening case and decide what CRISPR could and could not ethically do.
- Write a CER claim about using CRISPR in the case, with two pieces of evidence.
- Submit your annotation and reproductive screening CER as your daily evidence.

Evidence: CER - Annotated CRISPR article (guide RNA, Cas9 cut, repair step marked; off-target defined) plus a CER on using CRISPR in the reproductive screening case.

#### My notes, examples, and questions

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

- You'll be able to explain CRISPR-Cas9 editing and off-target risk.
- You'll be able to apply CRISPR limits to a reproductive case.

#### My notes, examples, and questions

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

No special lab safety notes today. Follow normal classroom and digital-work expectations.

#### My notes, examples, and questions

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## Cornell Notes - Continued

### Summary

Today's lesson focused on CRISPR and reproductive screening. The main target was: Explain how CRISPR-Cas9 edits DNA, including off-target risk, and apply it to a reproductive screening case. The evidence of learning is CER: Annotated CRISPR article (guide RNA, Cas9 cut, repair step marked; off-target defined) plus a CER on using CRISPR in the reproductive screening case.. In my own words, the most important idea from today is:

**My summary**

**My final question or connection**