Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_\_\_\_\_\_

**Genetic Technologies**

**DNA Extraction**

**Go to: http://learn.genetics.utah.edu/content/labs/extraction/**

1. List a few reasons we would want to extract DNA from someone.
2. Why do we swab the inside of someone’s cheek when we extract their DNA?
3. What are the four steps to DNA extraction?
4. What does “lysis” mean in Greek?
5. How does the lysis solution work?
6. What is a centrifuge and what do we use it for?
7. Why do we use isopropyl alcohol?

**Gel Electrophoresis**

**Go to:** [**http://www.yourgenome.org/facts/what-is-gel-electrophoresis**](http://www.yourgenome.org/facts/what-is-gel-electrophoresis)

1. What is gel electrophoresis? Summarize it and how it works in a short paragraph.
2. How are the results read?

**Go to: http://learn.genetics.utah.edu/content/labs/gel/**

1. When do scientists use Gel Electrophoresis?

2. What does the Gel do?

3. How can you make the DNA move across the gel?

4. Why do the strands separate?

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strands move through move quickly than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_strands

6. What are the six things you need to make a gel?

7. What is the purpose of the buffer?

8. How long does it take for the gel to cool and solidify?

9. What are the two purposes of the loading buffer?

10. What is the purpose of the DNA size standard?

11. What charge does DNA contain?

12. Would having the charges backwards affect the outcome of the experiment?

13. How do you know the current is running?

14. Why is the DNA moving towards the positively charged end?

15. Enter the size estimates of the DNA strands from large to small.

**Click below on the link that says: “Can DNA demand a verdict?”**

**Read through the information and answer the following questions:**

16. In what percentage of criminal cases is DNA profiling used?

17. How many base pairs do we have that is to just us?

18. Click on PCR and after reading the definition, describe what it is in your own words.

**Return back to “Can DNA demand a verdict?”**

19. Look at the gel electrophoresis picture on #7. Which fragment profile matches the evidence DNA?

20. Evidence DNA profiles are typically compared with who?

21. It is easier to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a suspect than to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ someone based on a DNA match.

22. Is DNA evidence enough to get a person out of jail? Why or why not?

**PCR**

**Go to:** [**http://learn.genetics.utah.edu/content/labs/pcr/**](http://learn.genetics.utah.edu/content/labs/pcr/)

1. How many base pairs is the human genome made up of?
2. What does PCR stand for?
3. Why do we use PCR?
4. What are primers?
5. Why do we need to add nucleotides to the tube?
6. What does heat do to the DNA?
7. What does the cold temperature do?
8. What is DNA Polymerase and what does it do?
9. How many copies of the target sequence do we end with?