

LAB: WHICH DOG ATE MY HOMEWORK?

BACKGROUND. Review the basics of micropipetting and gel electrophoresis.



SCENARIO.

Jane had been diligently studying and doing her biology homework all day, before going to a party Saturday night. When she came back home, her homework was half chewed up. There was still a big puddle of drool on her desk. Jane knew it had to have been one of the dogs that did this dirty deed -- but which one? Her family has 2 dogs (suspects A and B). After questioning her brother, she also found out that the neighbors' two dogs (suspects C and D) had come over that night. So she took cheek swabs from her dogs and the neighbors' dogs to do a DNA fingerprinting analysis. Assume that the DNA samples from each suspect has already been isolated, amplified, and cut with restriction enzymes. You will be separating and analyzing the DNA fragments by agarose gel electrophoresis.

MATERIALS:

P-20 micropipette, pipet tip box, waste cup, microfuge tube rack, tubes with samples ABCDE, gel electrophoresis system, white laminated sheet

METHODS.

1. Your team will load 5 ul of each DNA sample into the 0.8% agarose gel.
2. Record how the DNA samples are loaded into the gel wells.
3. Run the gel for 10 - 20 minutes with Mini One gel system, and turn off before any dyes run off the gel. If using another brand for electrophoresis, run at 135 Volts for 15 - 30 minutes or until the colored samples are separated into distinct bands.
4. Remove the gel from the electrophoresis box and place on the white laminated paper. Mark your team name and the sample letters on the sheet for your data photo.

ELECTROPHORESIS of DNA SAMPLES - GEL LOADING ORDER

Lane	1	2	3	4	5	6	7	8	9
DNA Sample									

DATA. For each suspect and evidence, count the number of “bands” and list the different colors of the bands. Compare and record (draw) the location of the color bands of each lane in the gel, or attach photo.

DNA Sample	Dog Suspect A	Dog Suspect B	Dog Suspect C	Dog Suspect D	Homework Evidence
Pattern of Colored Bands					



Name: _____

NOTES.

DATA ANALYSIS.

1. Which suspect or suspects match the same number of bands as the evidence? _____

2. Which suspect or suspects match the same colors of bands as the evidence? *Hint: the colors that match will also be the same distance from the loading well.* _____

3. Which suspect or suspects match the evidence in number of bands and colors sharing the same separation pattern as the evidence? _____

4. Explain the similarities between the suspect or suspects that match the evidence using data from the table above and question #4. _____

5. Which suspect or suspects would you charge as guilty? Justify your claim using evidence. _____

