a WOW Lab BLUEPRINT

Gel Electrophoresis

Student Handout

In the following handout, students will be required to:

- Record observations
- Use their observations to draw conclusions

Provided in this document are sample answers (page 2) and a blank handout (page 3). The blank handout should be made available to each group prior to the activity.

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Gel Electrophoresis - Handout Answers

Student Handout - Answers

Table 1

VIAL	DROPS OF RED	DROPS OF BLUE	DROPS OF YELLOW
Control (C)	3	3	3
1	6	2	1
2	5	2	2
3	4	1	4
4	7	1	1
Crime scene (CS)	4	1	4

Draw a diagram of the coloured bands observed in the completed gel in the space below. Be sure to use the correct colours and include measurements of how far each band travelled from the sample well.
The diagram students draw should be based the experimental results and will vary.

What colours were used for each sample?
All samples contained red, blue and yellow in different quantities. It is possible that samples that only contained one drop of a certain colour did not show a band of that colour (Table 1).

What colour migrated the furthest? What colour migrated the least?
Yellow migrated the furthest and blue migrated the least.

Is there a difference in the intensity of the colours? Rate the intensity of each of the bands using the following scale: 1-5, where 1 = dull, 5 = bright on the diagram that you drew above.
There should be a difference in intensity based on the number of drops of each colour added to the sample. The control contains an equal number of drops of all three colours and can be used to compare the intensity of the other samples. Generally, the more drops that are added, the more intense the band. Refer to table 1 for the relative number of drops of each colour contained in a sample.

Looking at the results, which suspect is guilty?
Suspect 3 is guilty.

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Gel Electrophoresis - Student Handout

Student Handout

An individual (the name cannot be released) was found unconscious in the park. He or she has severe bruising, but no blood was drawn and he or she has no recollection of what happened. When the police were investigating the area, they noticed a small pool of red substance located close to where the individual was found. They thought that it could be from the attacker, but they decided that it would be better to get a team of crime scene investigators to analyze the blood. Once the investigators arrived, they took a sample of the liquid and placed it in a small vial and labelled it crime scene (CS). The sample was then transported to the lab so that it could be analyzed by forensic scientists. Four suspects were taken into custody and a blood sample was drawn from all of them -- these are the vials on the table labelled 1- 4. Follow the *Activity Instructions* to perform gel electrophoresis on the samples in order to determine which suspect is guilty.

Draw a diagram of the coloured bands observed in the completed gel in the space below. Be sure to use the correct colours, and include measurements of how far each band travelled from the sample well.

What colours were used for each sample?

What colour migrated the furthest? What colour migrated the least?

Is there a difference in the intensity of the colours? Rate the intensity of each of the bands using the following scale: 1-5, where 1 = dull, 5 = bright on the diagram that you drew above.

Looking at the results, which suspect is guilty?