Jonathan Quang 5/2/15

Lab #7 Gel Electrophoresis SLS4409/Period 4,5

1. If hand soap was used instead of SDS, more bubbles would have been created. This would have made DNA extraction much more difficult

2.The alcohol was chilled because adding a cold substance will make DNA condense quicker. A cold substance means that there is less thermal energy in it. This results in molecules that are moving slower than the current solution. When the cold alcohol is added to the substance, it slows down the movements of molecules in the solution. When movement of molecules has slowed to a sufficient rate, it will begin to condense.

3. The results of electrophoresis were clearly defined. In the red well that represents Ms.Scarlet's DNA sample, there was only one red band directly under the well. Under Mr. Green's well, a blue band followed by a yellow band appeared. In the yellow well that represents Colonel Mustard, a single yellow band appeared. Under the blue well that represents Ms. Peacock, a blue well appeared. The white well that represents the DNA crime scene data shows a red band over a yellow band, giving the appearance of an orange band. Certain bands travel different distances because the fragments of DNA have different sizes. As the fragments move toward the positive end of the buffer solution, the smaller fragments of DNA move further than the larger fragments as the smaller fragments can move through the gel easier.

4. The well belonging to Ms.Scarlet holds the blood belonging to the victim and Colonel Mustard's DNA was found at the crime scene. The second part of the lab regarding the murder mystery states "Ms.Scarlet has been brutally murdered...The crime scene investigator has collected a number of blood samples from the Library..." (2). This suggests that the DNA analyzed was indeed from the crime scene since Ms.Scarlet's red DNA fragment was also present in the crime scene sample. This proves the crime scene sample valid. The crime scene sample also contains only one other DNA band, a yellow band. This means that only those with yellow bands were at the crime scene, leaving Mr.Green and Colonel Mustard. However, Mr. Green also has a blue band, which is not present in the crime scene sample while Colonel Mustard only has a yellow band. This means that Colonel Mustard was definitely at the crime scene.

5. If the smallest fragment is 70 base pairs, other fragments of the same layer will also be 70 base pairs long. The smallest fragment is about 7/8 above the bottom of the gel, making each eighth of the length of the gel about 10 base pairs long. The only other larger fragment size is the closest to the top, placing it about 80 base pairs long.

6 . DNA should be added at the negative pole because nucleic acids are negatively charged. The nucleic acids will be repelled by the negative pole and attracted to the positive poles.

7. Child Y belongs to Megabuck's because every DNA band of Child Y that does not belong to the mother matches with the bands in Megabuck's DNA. Every other child has DNA bands that does not belong to Megabuck's.

8. Baby 1 belongs to the Stevenson family because the first band (from top to bottom) is only present in Mrs. Stevenson. Baby 2 belongs to the Jones family because the first band is only present in Mr. Jones. Baby 3 belongs to the South family because the first band is only present in Mr.Smith.