

Bubble Gum Mystery



Background

Last week your teacher found a big wad of gum on her chair. Who put the gum on the chair? She has three very adamant gum chewers in his class. Having asked them numerous times to spit out their gum, she suspects that the gum belonged to one of them. But how can we tell whose gum it is? You can help figure this mystery out.

Pre-lab

What is DNA?

What is the function of DNA?

What are some characteristics or properties of DNA?

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How can we take advantage of these properties to help us figure out whose gum was on the chair.

What tricks can we use to see DNA?

Materials

DNA from three suspects labeled 1, 2, 3
the GUM (G)
micropipette and tips

electrophoresis apparatus
Tris-acetate/EDTA solution (TAE)
agarose

Procedure

1. Get your electrophoresis apparatus. Make sure the comb is in place and that there are stoppers at both ends of the gel space.
2. Pour hot agarose into the gel space until it reaches the top of the gel box. Let the agarose harden, which should take about 10 minutes. Don't touch or move your gel until it's hard. **Why not?**

Draw a picture of gel and label which samples will be added to which wells before you add DNA.

3. Load your **DNA SAMPLES** into the wells near the **BLACK ELECTRODE**. **Why near the black electrode?** Be sure to record which samples you loaded in which lanes.
4. Now pour **TAE** solution over your gel **CAREFULLY** so that it is completely covered plus a little more. **What do you think the TAE solution is for?**
5. Run that gel!! Plug the electrodes into your gel box (**red to red, black to black**), being careful not to bump your gel too much. Plug the power source into an outlet. **How can you tell your gel is running?**

If time permits, you will run the gel for about 30 minutes.



Collect and Record the DNA Data

Plug in your gel electrophoresis tray, and after **3 minutes** draw another picture.

After **15 minutes** draw another picture.

After about 30 minutes the DNA should be sufficiently separated to analyze. You can either stop here by wrapping the gel in plastic wrap and storing it in the refrigerator until the next class or you can proceed to the staining of the DNA fragments in the gel.

Place your gel carefully in a staining tray. Pour methylene blue to cover the gel. Let the stain sit on the gel for about **30 minutes**. Pour the stain back in the bottle and gently rinse your gel with water. Place your gel directly on a light box, what does it look like?

Draw a picture.

Conclusion

What can your data tell you about who put their gum on the teacher's chair?



Wouldn't be better to put the gum on the bedpost overnight ...?