** Gel Electrophoresis**

* **Student Handout**

Gel electrophoresis is a separation technique that uses an electric current.

The electric current is applied across a medium (a gel) to separate out molecules according to properties such as size, shape or charge. Electrophoresis can be used to separate many different types of substances including DNA, RNA and proteins.

It is commonly used in the fields of Genetics, Molecular Biology, Biochemistry and Forensics.

The dyes supplied behave like DNA molecules - moving towards the positive anode at a rate determined by the molecule size and shape.

How to Perform Gel Electrophoresis:

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| Ensure the gel is in the ‘running’ position, - see photo, so that the well holes (or comb if it is still in the gel) are placed on the negative terminal end.  Negative  terminal  Depending on how the gel was prepared, you may need to lift out and rotate the gel tray 90o to achieve this.  well holes  in gel |  |
| Carefully remove the comb if it is still in the gel.  Pour the 0.1% NaHCO3 buffer into the gel tank at both ends until the gel is completely covered. DO NOT fill the tank past the ‘MAX FILL’ line. | **C:\Users\e0705295\Desktop\photos for loan pool and webpage\IMG_6306.JPG** |
| Using a pipette and tip, load 10µL of each sample into the sample wells. Remember to change the tip for each dye. Make sure you have recorded the order of the samples in the wells.  Once all wells are loaded, place the lid on the gel tank and plug the other ends of the leads into the power pack.  **IMPORTANT**  **Do not turn on the power pack until your teacher has checked your setup.** | **C:\Users\e0705295\Desktop\photos for loan pool and webpage\IMG_6309.JPG** |
| Ensure the power pack is set at 100V for 30 minutes. If the power pack has a variable current setting, ensure this is set to 250mA.  Press the ‘start/pause’ button and watch for tiny bubbles at both ends of the gel tank which indicates the electric current is being produced. | **C:\Users\e0705295\Desktop\photos for loan pool and webpage\IMG_6322.JPG** |
| Press the ‘stop’ button once the power pack has run for 30 minutes.  **Turn off the power pack at the rear of the unit and unplug from the power point.** **Unplug the leads from the power pack.**  Carefully remove the lid from the gel tank by **pressing down on the white knobs** and lifting the lid off the tank. Do not unscrew the leads whilst attached to the tank.  The gel tray can now be removed from the tank to observe the movement of dyes. | **C:\Users\e0705295\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\GD9WLP18\IMG_5156.JPG** |