

## Principles of Gel Electrophoresis with DNA & Colored Dyes

### *Protocol*

#### Load Gel & Run

1. Select a set of six colored samples. Record their labels and colors in the table below.

Sample Number	1	2	3	4	5	6
Dye Color						

2. Fill in the boxes in the table below, listing the names and loading order of the samples as you put them into the gel. With the electrodes of the electrophoresis chamber pointing toward you, Lane 1 (Well 1) is nearest to you.

Lane/Well 1	Lane/Well 2	Lane/Well 3	Lane/Well 4	Lane/Well 5	Lane/Well 6

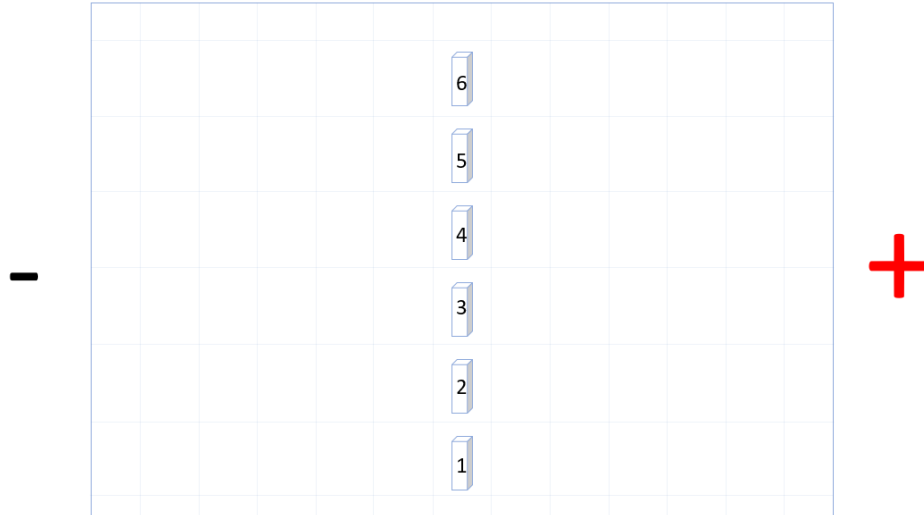
3. Take the dams or tape off the side of the gel tray. Put the gel in the gel box. Fill the gel box with ~350ml of 1X NaBorate buffer (cover the gel completely, but don't cover the electrodes). Remove the comb from the gel. **(Usually done by instructor!)**
4. Use a micropipette to load 10 $\mu$ l of the sample into the wells in the middle of the gel according to the above table. Remember that Lane 1 (Well 1) is closest to you and Lane 6 (Well 6) is furthest away.
5. Place the lid on the gel box and connect the electrodes into the power supply. Make sure that the black plug is in the black outlet and the red into the red.
6. Turn on the power supply and set it at 220V. Bubbles at the electrodes also indicate that electric current is running through the gel. The gel will run for approximately 10 minutes.

#### View Gel

After the gel has run, turn off the power supply and remove the lid from the gel box. Put the gel on white paper and examine the colors of the bands and spots in the gel.

## Analysis

Use colored pencils to draw below what you see in the gel.



1. Use the diagram you drew to answer the following questions:

- A. Which sample(s) that you ran had the most different dyes in it?
- B. Which sample(s) that you ran had the least number of dyes in it?
- C. Were any of the samples that you ran composed of one pure dye? If so, which one(s)?
- D. How many of the samples were positively charged?

If there were more than one positively charged dye in your samples, what color was the largest positively charged dye? What color was the smallest positively charged dye?

- E. How many of the samples were negatively charged?

If there were more than one negatively charged dye in your samples, what color was the largest negatively charged dye? What color was the smallest negatively charged dye?

- F. Did any of the results in the gel above surprise you? If so, which ones?

- G. Lane 6 (Well 6) had a sample containing DNA. With the help of your instructor, look at the gel using the ultraviolet light box. Is DNA positively charged or negatively charged? How do you know?