Polymerase Chain Reaction and Gel Electrophoresis,

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Reagents:

* Micropipettes (p10, p100, p1000)
* Micropipette tips
* 1.5 mL microcentrifuge tubes
* Agarose gel (1.5%) in TBE buffer
* PCR Master Mix (Taq polymerase, dNTPs, MgCl₂, primers)
* DNA sample
* Electrophoresis chamber & power supply

Experiment Summary

This lab builds on what we did last time isolating our own DNA from cheek cells. Now, we take it a step further by amplifying our DNA using PCR and then analyzing it with gel electrophoresis to check if everything worked properly.

Gel Electrophoresis of Unknown Dyes

First, we will practice loading unknown dye samples into an agarose gel and running an electric current through it. The goal is to see how different molecules move based on their size and charge. Since DNA is negatively charged, it moves toward the positive electrode, and we will observe and measure the migration to help identify different dyes.

PCR Amplification

Next, we will use PCR to amplify a specific region of our cheek cell DNA. PCR is basically a way to copy DNA millions of times in a test tube. The master mix we use includes:

* Taq polymerase
* dNTPs
* MgCl₂
* Primers

After PCR is complete, we will load our amplified DNA into the agarose gel and run gel electrophoresis to check if we got the expected DNA bands. This will confirm if our PCR was successful and if we correctly extracted our DNA.