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ERASMUS+ PROGRAMME – KA2 – STRATEGIC PARTNERSHIP

HYBRID
LAB NETWORK

Electrophoresis

In this context, electrophoresis is a technique used to separate DNA fragments according to their size.
DNA samples are loaded into wells (indentations) at one end of a gel, and an electric current is applied to pull them through the gel. DNA fragments are negatively charged, so they move towards the positive electrode. Because all DNA fragments have the same amount of charge per mass, small fragments move through the gel faster than large ones. When a gel is stained with a DNA-binding dye, the DNA fragments can be seen as bands, each representing a group of same-sized DNA fragments.

Gel Electrophoresis Protocol

Materials
Agarose
Gel dye (SYBR green)
Molecular weight Ladder
Loading dye
TAE 1X
One-liter 50X stock of TAE
Tris-base: 242 g
Acetate (100% acetic acid): 57.1 ml
EDTA: 100 ml 0.5M sodium EDTA

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Procedure

1. Add dH2O up to one liter.
2. To make 1x TAE from 50X TAE stock, dilute 20ml of stock into 980 ml of DI water
3. Add 1g of agarose powder with 100 mL 1xTAE in a microwavable flask for a 1% gel
4. Microwave until the agarose is completely dissolved
5. Let agarose solution cool down to about 50 °C and add about 2-3 µl per 100mL gel of gel dye
6. Pour the agarose into a gel tray with the well comb in place and wait until solidified
7. Add loading dye to each of your DNA samples.
8. Fill gel box with 1xTAE
9. Carefully load a molecular weight ladder into the first lane followed by the rest of the samples
10. Run the 1% gel at 120 V until the dye line is approximately 75-80% of the way down the gel. A typical run time is about 1-1.5 hours, depending on the gel concentration and voltage.
11. Use an UV light to visualize your DNA fragments.

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