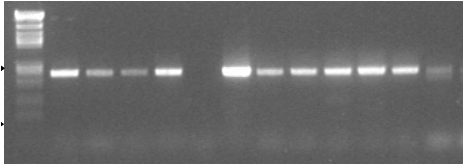


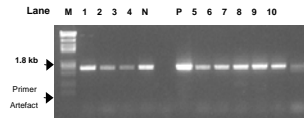
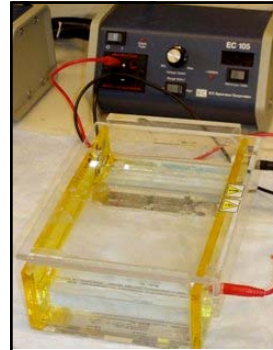
## What is the size of the PCR product?



Gel electrophoresis separates DNA fragments on the basis of size.

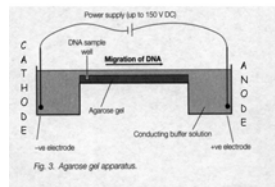
## Gel Electrophoresis What is it?

- a method used to separate macromolecules like proteins and nucleic acids (ie DNA/RNA) based on their size and electric charge



## How is Gel Electrophoresis Achieved?

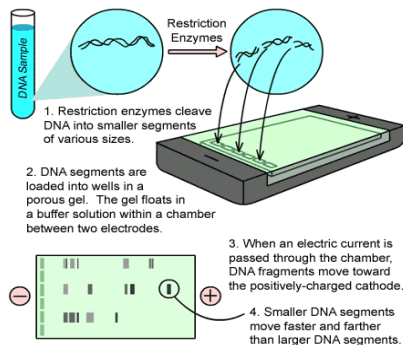
- The electrical current creates an anode and cathode at either end of the gel and these attract or repel the DNA molecules depending on their charge
- DNA being negatively charged is repelled from the cathode (+) and attracted to the anode (-)



## How is Gel Electrophoresis Done?

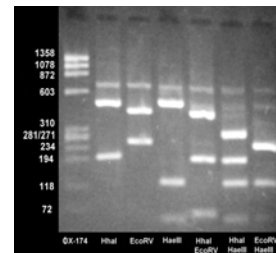
- The agarose gel is a solid jelly like substance to which the DNA mixture (with a dye) is added to
- An electrical current is added to the gel and forces the pieces of DNA to move across the gel

## Summary of Gel Electrophoresis of DNA



## The Gel Results

- In this technique the rate at which the different pieces of DNA move across the gel depends on their size
- The smaller pieces move fast and make it further down the gel then the larger fragments
- The DNA appears as a banding pattern spread from one end of the gel to the other.



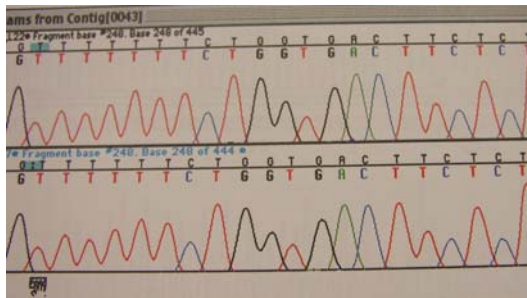
## Why do we use Gel Electrophoresis?

- Gel electrophoresis is an important tool in biology
- It can be used to identify specific DNA molecules that have been isolated and cut up by restriction enzymes
- We also use it to determine differences in the genomes of different plant and animal species

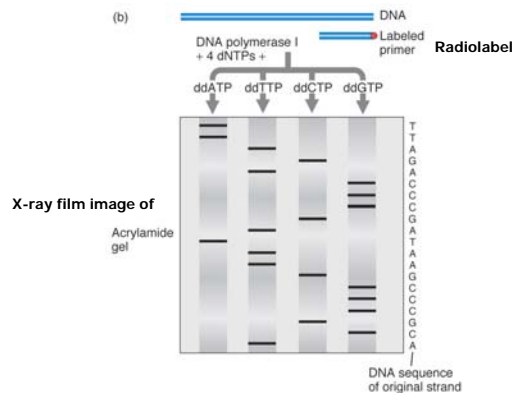
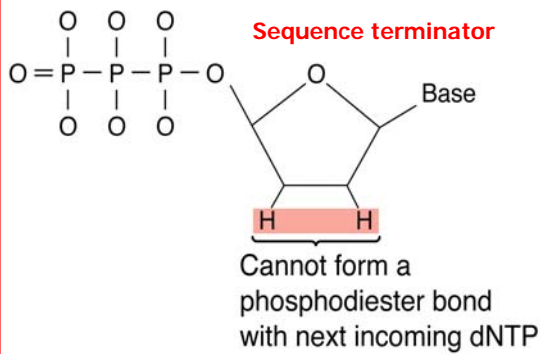
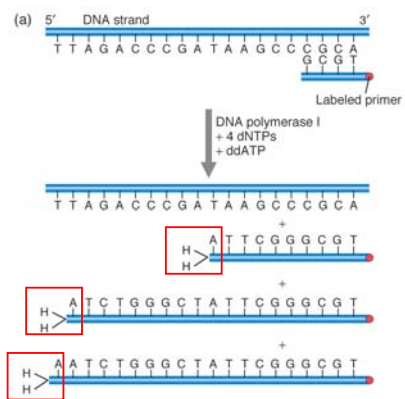
## Why do we use Gel Electrophoresis?

- Gel electrophoresis is also used in forensic science to compare the DNA fingerprints found at the Crime Scene and that of the suspect
- DNA samples collected from blood or semen are separated using GE
- The number and positions of the bands formed on each lane of gel is the actual DNA fingerprint and is unique to each person

## Sequencing deciphers the DNA text

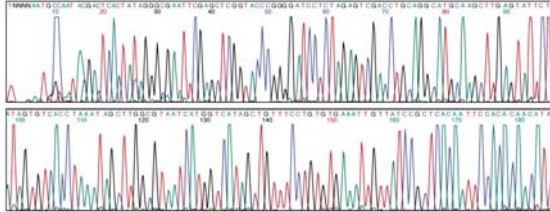


• The letters of the DNA alphabet are strung together to create instructions



## Sequencing Chromatogram

### Fluorescently labelled sequence terminators



DNA sequencing is currently automated and generates a text file of the DNA sequence and a chromatogram image of the sequencing