

DNA DETECTIVE

CRIME SCENE INVESTIGATION



Student's guide

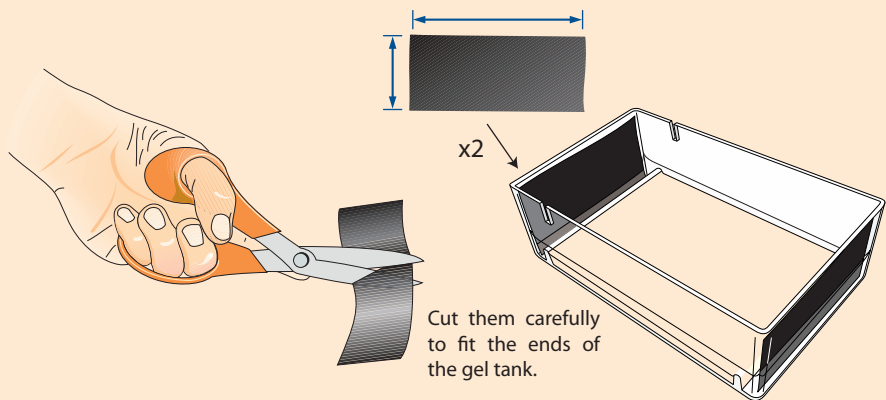


The body of a 52-year-old male has been found. He seems to have been struck on the head. The forensic team have been to the site to investigate and collect samples for analysis. The samples included: blood taken from the victim and a blood sample of unknown origin found on the handle of a blunt instrument next to the body, this likely belongs to the perpetrator.

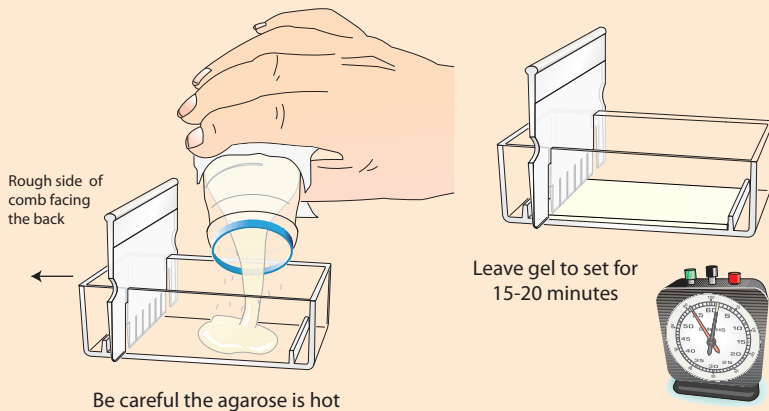
Further investigation by the police has shown there are 3 potential suspects. All were in the area at the time the crime was committed and so blood has been taken from each of them to see if it matches the unknown blood sample found at the scene.

Through DNA analysis, you need to try and determine which of the suspects likely committed the crime.

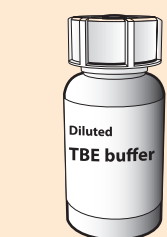
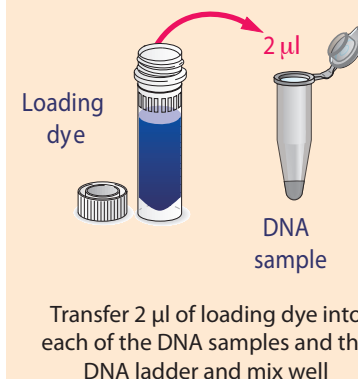
Cutting out the electrodes



Pouring the gel

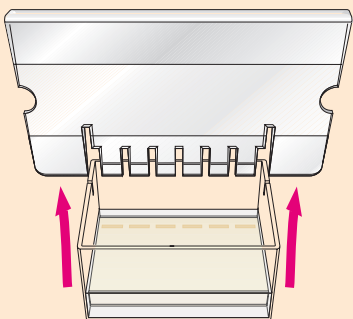


Preparing the DNA samples



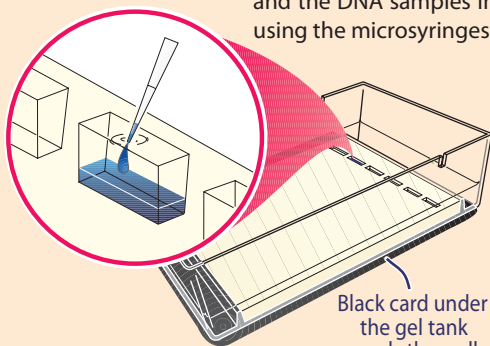
Pour 12-15 ml of TBE buffer on top of the set agarose gel

Gently pull the comb out of the gel. Be careful to keep the comb straight so the sample wells are not damaged.



Loading the gel

Load 10 µl of DNA ladder into lane 1 and the DNA samples into lanes 2-6 using the microsyringes

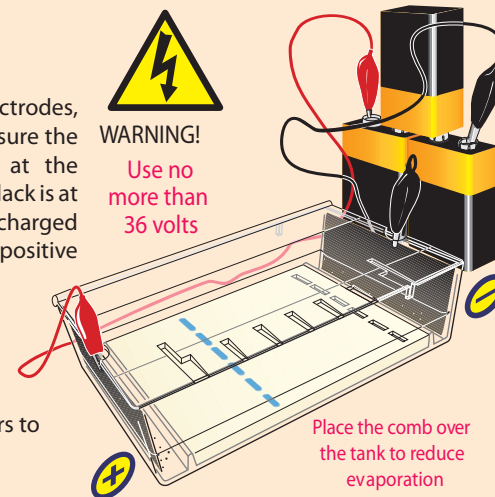


Label your gel tank with the corresponding DNA sample e.g. V for victim, CS for crime scene DNA etc.

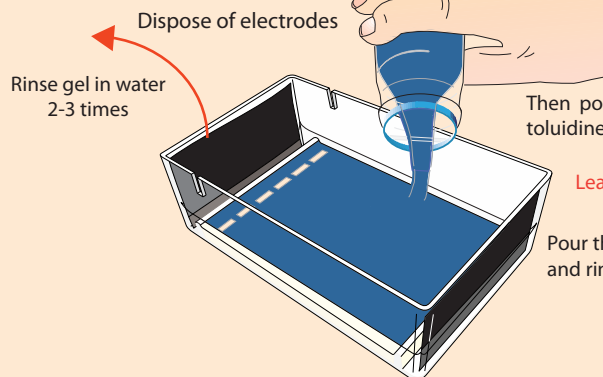
Running the gel

Using your carbon fibre electrodes, run your gel. Always make sure the red positive electrode is at the bottom of the gel and the black is at the top. DNA is negatively charged and will travel towards the positive electrode.

It will take approx. 2 hours to run your gel



Staining the gel

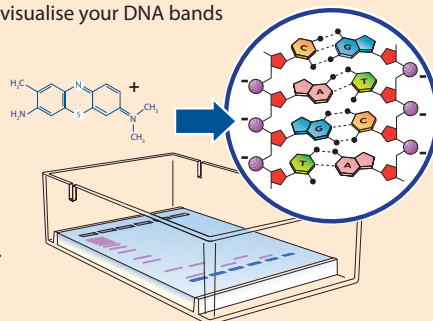


Then pour on diluted toluidine blue O stain.

Leave for 4 minutes.

Pour this back into the bottle and rinse gel in water 3-4 times.

Positively-charged toluidine blue molecules will bind to the negatively charged phosphate groups on the DNA molecules; allowing you to visualise your DNA bands

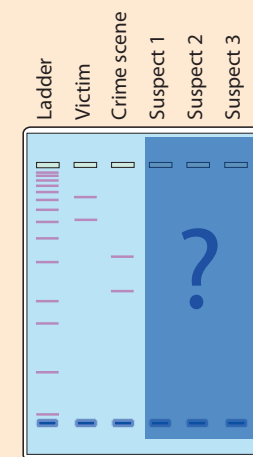


Analysing the results

Bands will start to appear on your gel after 30-60 minutes and can be seen clearly the next day.

The ladder, victim's DNA and crime scene DNA should look something like this.

Which of the suspects' DNA matches the DNA found at the crime scene?



Do you notice anything else about the DNA taken from the suspects?