

**TAKE HOME ACTIVITY:
DNA extraction from bananas**

PROTOCOL

1. Squash a small piece of banana (2-3 cm) with a fork
2. Pour 12 ml extraction buffer¹ into a beaker- this buffer contains salts necessary for the precipitation of the DNA. Add 3ml detergent which will break open the cells
What is the purpose of the detergent and of the salt solution in the beginning step?
The detergent dissolves the lipids that hold the membranes together and this releases the DNA into the solution. The detergent further causes lipids and proteins to precipitate out of the solution, separating them from the DNA. Shampoo or washing liquid can be used.
The salt in this first step enables the DNA strands to come together and aggregate.
3. Add the banana pulp and mix well
4. Put two layers of paper tissue into a funnel and moisten with water. Pour the banana mixture into the funnel and, collect the filtrate in a conical flask. Throw away the filter paper with the remains of the banana pulp.
5. Put 1ml of the filtered banana juice into a plastic tube
6. Add 1ml of distilled water and mix well
7. Carefully pour 8ml cold alcohol down the side of the tube so that the alcohol remains in a layer above the juice **(Here the concept of density can be reinforced! With a lower density, the alcohol will 'float' on top of the juicy solution. When performing the experiment, ask the students to predict what will happen given the density of the two liquids)**
8. Let the solution sit for 2-3 minutes. You can watch DNA precipitate out into the alcohol layer. A white substance will become visible at the interface where the two liquids meet-this is the DNA!!!
The alcohol precipitates DNA. DNA is not soluble in alcohol. When alcohol is added to the mixture, the components of the mixture, except for DNA, stay in solution while the DNA is precipitated.
9. When good results are obtained there will be enough DNA to be lifted out of the tube with a hooked Pasteur pipette or a hooked paper clip.
10. After the experiment, the extracted DNA can be taken home in a small Eppendorf tube containing some alcohol

¹ 8.8g NaCl and 44g Sodium Citrate in 1l water, but eventually kitchen salt would work!!!