

LEARNING RESOURCE

DNA EXTRACTION

MATERIALS

- A large strawberry (or 2/3 smaller ones)
- A bowl and fork
- 10ml Salt water solution
- A few drops of washing up liquid
- Cocktail stick
- Filter paper and funnel
- 10ml Alcohol (Ethanol or other) – stored in freezer beforehand to keep cold

PREPERATION

- None required

INSTRUCTIONS

1. Take the stalk out of the top of your strawberry and mash it up in a bowl using a fork. Add 10ml of salty water to the bowl and continue mashing your strawberry until there are no lumps.
2. Set up a funnel with a filter paper inside, you could use a coffee filter paper or just a very fine sieve if no filter paper is available. Add your mashed-up strawberry into the funnel and allow the strawberry juice to filter through leaving any lumps behind. Collect your juice in a small container or tube.
3. Once you have your filtered strawberry juice, add a few drops of washing up liquid and gently stir using a cocktail stick – try not to create any bubbles or foam.

LEARNING RESOURCE



4. Next you need to take your alcohol from the freezer and very slowly add this on top of your filtered strawberry, the alcohol should form a layer on top.
5. If you bring the tube to eye level you should be able to see some white stringy material appearing – this is the DNA forming! You can use a cocktail stick to gently lift the fibrous material out of the tube and have a closer look.

EXTENTSION

- What other fruits do you have that you could test? Can you see if you can extract and DNA from a banana or a peach and compare the results?
- If you swirl 10mls of salty water around your mouth and spit it into a tube you can use the same process to extract your own DNA – give it a go.
- If you have access to a microscope, have a closer look at the DNA you find and make some drawings.

LEARNING RESOURCE

WHAT IS DNA AND HOW DOES THE EXTRACTION WORK?

Every human on the planet shares 99.9 percent of the same DNA. That 0.1 percent difference is what determines your eye and hair colour, how tall you are, your skin colour, and perhaps even your natural athletic ability. Every living thing contains DNA in its cells too, so using a fruit we can extract DNA and get a closer look.

DNA is contained in every cell nucleus of every living thing, in order to extract DNA we need to collect some of these cells from the tissues they are in (by mixing with a salt solution) and make them burst (by adding washing up liquid). Once the cells have burst open the DNA is easier to find. The final step in the extraction process is adding the alcohol layer. This process is known in chemistry as 'precipitation' and it works because of the DNA structure. Some of the structure likes to sit in the watery solution, whereas some likes to sit in the alcohol solution, therefore when the two solutions are layered on top of each other DNA will naturally sit in between the two layers. The stringy material forms at the join between the two layers and can be captured and pulled from the mixture easily.