**Extracting DNA from a strawberry**

**Ako: Learn about DNA and inheritance**

**Hua: I have a basic understanding of the structure of DNA**

****DNA is present in every cell of all plants and animals and determines the genetics of the individual organisms.

While other fruits are soft and just as easy to pulverise, strawberries are the perfect choice for a DNA extraction lab for two reasons: they yield more DNA than any other fruits, and they are octoploid, meaning that they have eight copies of each type of DNA chromosome. These special circumstances make strawberry DNA easy to extract and see.

For comparison, human cells are generally diploid, with only two sets of chromosomes.

To extract the DNA from a strawberry, each component of the extraction solution plays a part. The dishwashing soap helps to dissolve the cell membranes. The salt is added to break up protein chains that hold nucleic acids together, releasing the DNA strands. Finally, DNA is not soluble in ethanol (isopropyl alcohol) and even less so when the ethanol is ice cold.

Watch the video [Strawberry DNA – Sick Science! #114](https://www.youtube.com/watch?v=NCu7T_1_WLo&ab_channel=SickScience%21) – Steve Spangler Science

**Mahi: Extract DNA from a strawberry**

**Materials needed for each group:**

* Dishwashing soap
* 2 small beakers
* Larger beaker – 250 mL
* Plastic bag – with zipper
* Strainer
* Tweezers
* Strawberry (fresh or frozen) – leaves removed
* Measuring cup
* Measuring spoons
* Salt
* Isopropyl alcohol – must be very cold
* Water
* Wooden stick or spoon

**Procedure:**

1. Measure 90 mL of water into a small beaker.
2. Add 10 mL of dishwashing soap to the water.
3. Add ¼ teaspoon salt to the beaker.
4. Gently mix it to create a DNA extraction liquid. Try not to create too many bubbles.
5. Put the strawberry in the plastic bag.
6. Add the extraction liquid to the bag.
7. Remove as much air as possible and seal the bag.
8. Squeeze the strawberry into a fine mash. This action and the extraction liquid break open the cell walls and release the DNA into the solution.
9. Place the strainer over the larger beaker. Pour the mixture into the strainer to separate the liquid from the solids.
10. Use a spoon to gently press any remaining liquid from the mashed strawberry.
11. Transfer the liquid to small beaker.
12. Add 5 mL of iced isopropyl alcohol. Do not stir. This isolates the DNA.
13. Observe what is happening in the beaker.
14. Use the tweezers to gently remove the white film from the liquid – the strawberry’s DNA.

**Mahi: Do some research to answer this question**

Why do strawberries and other living things have DNA? Bullet point your information below.

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