



CHILDREN'S
MEDICAL
RESEARCH
INSTITUTE

Jeans for Genes®

How to make DNA in your kitchen!

Children's Medical Research Institute is finding cures for childhood genetic diseases and other serious conditions affecting 1 in 20 kids. When you donate, such as through our iconic Jeans for Genes® campaign, you ensure this vital research continues.

Try this activity, with adult supervision, and be a scientist for a day!

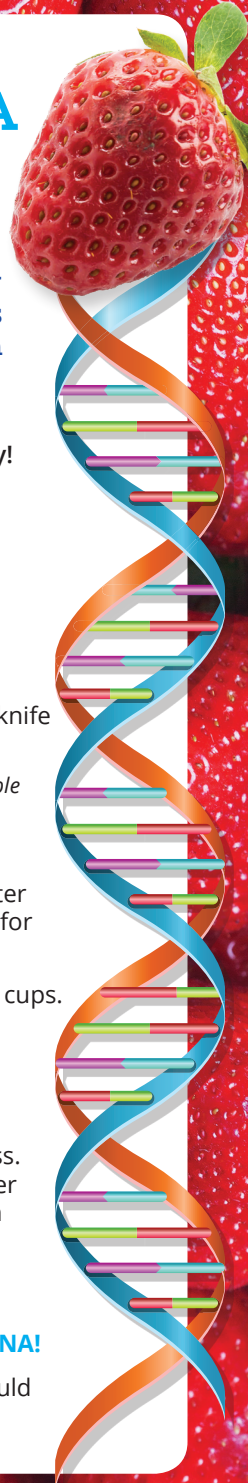
What you need

- 2 clear glasses (or plastic cups)
- A small funnel
- Coffee filter paper
- 2-3 small or 1 large strawberry
- 100 ml rubbing alcohol (like Isocol, found at the chemist)*
- 1 tsp salt
- 100 ml water
- Dishwashing liquid
- Toothpicks
- Chopping board and knife (or use your hands)

*Note: once rubbing alcohol (isopropanol) is added, the mixture is no longer edible

How to make DNA!

1. Chop up strawberries and smash with the flat of the knife, or better yet use your hands to smash them. This is a great part of the fun for kids. (A food processor can also be used.)
2. Transfer the mashed strawberries to one of the glasses or plastic cups.
3. Dissolve salt in water and add to strawberry pulp.
4. Add a squirt of dishwashing liquid to the glass, swirl, and let sit for 1-2 minutes.
5. Place a coffee filter in the funnel and insert it into the second glass. Pour the strawberry mixture into the top of the funnel, so the filter retains the large chunks of strawberry. Only pink juice should run out of the funnel into the glass. Discard the filter paper and strawberry chunks.
6. Pour the rubbing alcohol into the glass of pink juice, and let sit. You'll see a frothy white material form near the surface. **This is DNA!**
7. Use a toothpick to fish out the long, goopy strands of DNA. It should have the same consistency as mucus. Kids can touch but not eat.



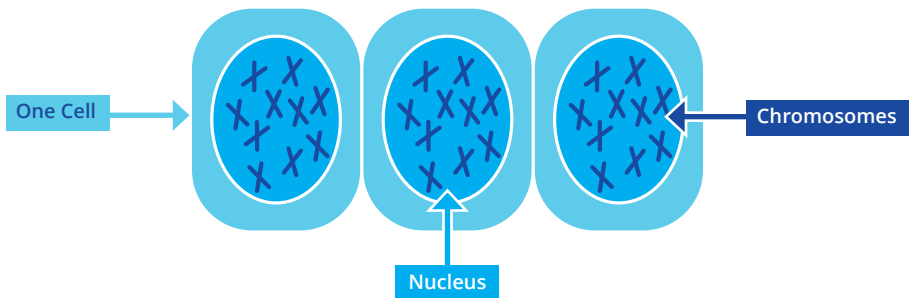
What's happening in science terms?

- Mashing up the strawberry breaks it into cells.
- Soap breaks open the cell membrane, like popping a balloon, releasing the cell contents, including DNA.
- By filtering the lumpy strawberry mixture, we remove most of the rubbish that is left when the cells are broken up. The liquid that we keep contains the DNA.
- Salt sticks to the DNA so you can see it (helps it precipitate).
- Alcohol dehydrates the DNA, helping it to clump together and 'precipitate' meaning it's no longer dissolved in water and becomes solid enough to see.

So where did the DNA come from?

All living things contain DNA. Living things are made of tiny building blocks called cells. We can't see using our eyes, but we would be able to see them if we looked under a microscope. Your skin is made of layers of cells and strawberries are made of layers of cells too.

A single layer of cells



DNA is contained inside the nucleus of the cell, the cell's control centre, packaged into tiny structures called chromosomes

Inside our cells, and the cells of all living things - including strawberries - there is a collection of chromosomes.

Chromosomes are made of a very long strand of DNA. DNA is like a blueprint or instruction manual that tells our cells and our whole body how to work. Your DNA makes you human, a strawberry's DNA makes it a strawberry. If your DNA was switched around, you'd be a strawberry instead of a human!

DNA is normally far too small to see, even with a microscope. It is an incredibly thin but very long molecule. Adding alcohol to the top of the strawberry juice causes the DNA molecules to clump together. Eventually, enough DNA clumps together so that we can actually see it!