

Neat DNA Facts

DNA is an abbreviation for deoxyribonucleic acid

Nearly 2 metres of DNA is located in the nucleus of every cell in our body!

The base pairs that make up DNA bind together to form the classic double helix.

We have over 3 billion base pairs in our DNA!

DNA is a code for what our body needs to make to survive, such as proteins, enzymes, and hormones!

Our DNA is organized into chromosomes. We have 23 chromosomes from each parent, so 46 in total!

Every person's DNA is 99.99% similar to that of another person! It is the 0.01% differences that give us a unique DNA fingerprint.

According to most estimates, the % of the chimpanzee genome that is the same as the human genome: 98.5%

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DNA Extraction Experiment

Extract DNA with household materials and see it with your own eyes!



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Materials:

- Kiwi
- Table salt
- Bottled water
- Clear cup
- Spoon or straw
- Tape or elastic band
- Liquid dish detergent
- Cheesecloth (3 layers)
- Cold isopropanol (purchase at pharmacy, place in the fridge to cool)
- Wooden or glass stir stick



Preparation:

- Make the buffer solution by mixing 1 tsp of table salt in 100 mL water
- Make the soap solution by mixing 3 mL (3/4 tsp) liquid soap with 27 mL (2 Tbs) water.

The salt solution will help precipitate proteins and carbohydrates away from the DNA.

Step 1:

Scoop out the kiwi flesh into a Ziploc bag and mash for 2 minutes.



Mashing helps to break apart the cells and loosen the tough cell wall.

Step 2:

Add 10 mL of buffer solution and grind for at least 5 minutes. Use your weight and strength to really mash it up!



Step 3:

Assemble the filter by covering the top of a cup with the three layers of cheese cloth. Tape (or use an elastic band) the cheese cloth around the cup.



Step 4:

• Pour the kiwi mash through the filter. Let the solution drip into the cup.

• You can get extra juice by squeezing the kiwi through the cloth.



Step 5:

Add 3 mL of the soap solution to the filtered liquid. Swirl gently to mix.



The soap will help break open the cellular and nuclear membrane to release the DNA.

Two volumes = twice the amount of kiwi liquid.

Step 6:

• Pour 2 volumes of the cold isopropanol down the length of a straw (or the back of a spoon) into the kiwi liquid.



• The isopropanol needs to form a layer on top of the kiwi liquid.

DNA dissolves in water but precipitates in alcohol!

Step 7:

Let the liquid sit. The DNA should precipitate where the kiwi liquid meets the alcohol. You can use the stir stick to spool some out of the cup!

