



STEM @ HOME GUIDE: Strawberry DNA

- **Aim:** Extract the DNA from strawberries
- **Materials required:**
 - ✓ Strawberries
 - ✓ Water
 - ✓ Dish soap
 - ✓ Salt
 - ✓ Isopropyl (rubbing) alcohol
 - ✓ Ziploc bag
 - ✓ 2 small bowls or glasses (1 must be clear)
 - ✓ Measuring cup and spoons
 - ✓ Filter options:
 1. Funnel and Cheesecloth or coffee filter
 2. Small fine mesh strainer
- **Questions to think about before you start:**
 - ✓ What do you think DNA looks like?
 - ✓ How can we see the DNA without a microscope?

HELPFUL TIPS

Make sure the rubbing alcohol is very cold before using

You may want to use two baggies in case one of them leaks or breaks when smashing strawberries

- **Instructions:**

Make sure to perform the experiment as a team (parent and student).

- **NOTE:** Place the rubbing alcohol in the freezer at least 1-2 hours prior to starting.
- **Parent:** Cut the stems off the strawberries
- **Student and Parent:** Mix ½ tsp. salt, 1/3 cup water and 1 tbsp. dish soap in a small bowl; aside
- **Student:** Place the strawberries in your Ziploc bag, spend 1-2 minutes squeezing and smashing the strawberries
- **Parent:** Pour 2-3 tablespoons of the dish soap mixture from earlier into the baggie.
- **Student:** reseal the bag and squeeze the strawberry mixture for 1-2 minutes.
- **Parent:** Set up the funnel and cheesecloth/coffee filter or strainer over a cup or bowl.
- **Student:** Pour the strawberry mixture into the funnel or strainer and let the liquid drip into the bowl. This will take a few minutes at the end you should just have pulp in the filter and liquid in the bowl.
- **Student:** Pour the strawberry liquid into a clear glass or bowl.
- **Parent:** Slowly pour the rubbing alcohol down the side of the glass. Pour until the alcohol makes a layer ½ - 1 inch on top of the strawberry juice. Be careful to not mix or shake them together.
- **Both:** Notice the white/clear stringy stuff that has formed, this is the strawberries DNA!

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- **Extensions Activities:**

- ✓ Try the same activity but using another fruit like a kiwi or banana or another type of berry.
- ✓ Try using another type of soap/detergent like shampoo or another brand of dish soap and notice if it makes a difference in how much DNA you get.
- ✓ Try changing the amount of salt, dish soap or water or strawberries. Compare what you get to the first sample of DNA.

- **The science behind the fun:** Squeezing the strawberries helps to break them up and help you get more individual cells exposed to the dish soap mixture. The dish soap mixture included soap which is a detergent and helps to pop the cells of the strawberries to release the DNA inside. The salt helps the DNA clump together. The rubbing alcohol helps to move the DNA to the top of the liquid so you can easily see it. We can see the DNA when it is clumped together because strawberries are octoploid- meaning that each strawberry cell has 8 copies of each chromosome.

- **Vocabulary:**

- DNA – Deoxyribonucleic acid: the molecule that contains the instructions for every living thing.
- Genetics- the study of inheritance and how organisms vary and evolve over time.

- **Real world application:** Examining DNA is a very important area of science, called genetics. Scientists have been able to identify and read the DNA of humans and other organisms and this has helped them to develop medicine, cure diseases and even solve crime!

Did you know?

- Each person has enough DNA in their body to wrap around the Sun about 600 times!
- All living things- plants, bacteria, whales – have DNA and all of our genetic information is made from the same four building block letters A, C, G and T.

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Strawberry DNA Photo Guide



Supplies: Dish soap, water, salt, measuring cup, rubbing alcohol (cold!), strawberries and Ziploc bag



Smash strawberries, add dish mixture, smash more



Filter the strawberries, discard the pulp.



Pour the juice into a clear glass jar or cup.



Pour the cold rubbing alcohol gently down the side of the glass. The clear/white stringy stuff is the DNA!

