

Secrets of Strawberries

Follow these steps to discover the DNA hidden in strawberries.

Directions and Observations

1. Put a coffee filter over the top of a plastic cup and secure it with a rubber band.
2. Put a single strawberry in a ziplock bag and seal it. Remove as much air as you can.
3. Smash up the strawberry with your hand and fingers for 1 minute. Then pass it to a partner and let him or her smash it for another minute. Be careful not to break your bag. The best way to mash it is to massage the mixture at the bottom of the bag. Describe the smashed strawberry specimen:

I smell...

I feel...

I hear...

4. Add 12 milliliters of Lysis buffer (in the clear tube **without** a rubber band, made of dish soap, salt, and water) to the bag and zip it closed. Mash again for a minute, then pass it to a partner and let him or her mash it for an additional minute. Describe the sample now:

I see...

I smell...

Secrets of Strawberries (Cont.)

I feel...

I hear...

5. Tilt the bag so that the mush collects in one bottom corner of the bag, and open the bag. Carefully pour the mush into the coffee filter. Let the liquid drip through into the cup for about 5 minutes. You can gently stir with the small coffee stirrers. **NOTE:** Be careful not to poke a hole in your coffee filter with the stir stick!

While you wait, figure out whether the following statements are true or false, and discuss with your partner(s).

If the total DNA in one person were laid in a straight line, it would stretch to the sun and back over thirty times (it's ninety-three million miles from here to the sun). True or false? Discuss.

If you had really strong reading glasses, you'd be able to see the double helix or spiral ladder shape of DNA. True or false? Discuss.

6. After most of the reddish liquid has dripped into the cup, carefully remove the filter paper with the strawberry mush and throw it in the trash. Tilt the cup a little and gently pour the 10 milliliters of isopropanol (also known as rubbing alcohol, in the tube **with** a rubber band) into the cup, letting it slowly pour down the side of the cup. **DO NOT MIX!** Describe the sample now:

I see...

I smell...

I feel...

Secrets of Strawberries (Cont.)

I hear...

7. Observe and wait another 5 to 7 minutes. You'll see the DNA start to collect as a goopy glob, and you can "spool it out" on the tip of the plastic stick. Then describe the sample:

I see...

I smell...

I feel...

I hear...

While you wait, discuss the following statement with your partner(s) and figure out whether it is true or false:

DNA is chemically the same, whether it comes from a fish, a flower, a bacterium, a human, or a hero. If you were to isolate DNA from any of these life forms (like you're doing for your strawberry today), it would all look the same in your test tube. True or false? Discuss.

8. Transfer the spooled DNA into an Eppendorff tube with some isopropanol (eyeball the amount until the tube is about one-third full). You can take the DNA home with you, but keep it tightly closed to avoid evaporation of the alcohol. The DNA is stable in this form for many years.