

Extracting Strawberry DNA

Adapted from <http://www.genome.gov/Pages/Education/Modules/StrawberryExtractionInstructions.pdf>
for a group of 5 students with an adult moderator

Strawberries have enormous genomes. Humans have two copies of each chromosome (diploid genome). A chromosome is an organized package of DNA found in the nucleus of the cell. Strawberries have up to eight copies of each chromosome (octoploid genome). Today, we will extract this DNA using dish soap, salt, water, a coffee filter and alcohol.

Adult moderator should have (for each group): (ASK ABOUT STRAWBERRY ALLERGY)

1 quart size ziplock bag

1 large or 2 small strawberries

2 teaspoons of extraction liquid

(2 teaspoons of dish detergent, 1 teaspoon of salt, 1/2 cup of water)

1 coffee filter (use 2-4 filters for extra strength - be careful not to push pulp through or out top)

1 small cup

1 plastic tube with lid (50 mL)

Ice cold rubbing alcohol (5 - 15mL usually required for 1-2 strawberries)

measuring teaspoon

Paper towel

garbage bag

Instructions:

Student 1: Place 1 large or 2 small strawberries in plastic bag. Squeeze air out and seal bag. Crush strawberries as much as you can for 2 minutes. Pass the bag to Student 2.

Student 2: Add 2 teaspoons of extraction liquid to the bag. Remove air and seal bag. Crush strawberries for 1 more minute. Pass the bag to Student 3.

Student 3 (not allergic to strawberries): Put coffee filter over cup. Pour crushed strawberries into filter. Squeeze filter to get as much juice as you can out of them and into the cup. Wipe your hands with paper towel. Pass the cup to Student 4 and throw away the bag and coffee filter.

Student 4: Pour liquid into plastic tube. Use measurements on tube to determine how much liquid is there. Ask your adult moderator to slowly add that amount of rubbing alcohol. DO NOT SHAKE, but you can swirl gently being careful not to mix the alcohol and strawberry juice layers. Carefully pass the tube to Student 5.

Student 5: Look for the white strands forming in the top layer of liquid. This is the DNA. Use a wooden stick to gently scoop the DNA up out of the tube to show your classmates. When finished, put the DNA back in the tube, close the lid and throw the stick and tube away.