

# DNA Spooling from Strawberries

## Supplies

- Ziploc sandwich bags (1 per person)
- Strawberries (1 per person)
- 15 ml culture tubes or 25 ml graduated cylinders (for measuring)
- Small funnels (for filtering)
- Cheesecloth (2 ply cut into squares large enough to fit funnels)
- Test tube racks
- Test tubes (glass, 13x100 or longer, 1 per person)
- Salt
- Scissors
- Detergent (Dawn or Ivory)
- Isopropanol (rubbing alcohol)
- Bamboo skewers (1 per person)
  
- 100 ml Extraction Buffer for strawberry spooling
  - 2 g salt
  - 90 ml water
  - 10 ml detergent (ie. Dawn or Ivory)

## Preparations:

1. Use a marker to emphasize the 10ml mark on the 15ml culture tubes or use a graduated cylinder. These will be used to measure out the extraction buffer and isopropanol.
2. Cut squares of cheesecloth 2-ply thick.
3. Chill some isopropanol on ice. This protocol also works with room temperature isopropanol.
4. Set out rest of supplies.

## Procedure:

1. Spread a cheesecloth square in the funnel.
2. Set the funnel with cheesecloth over a test tube.
3. Place one strawberry in a closable sandwich bag and zip it closed. Try to get out as much air as you can.
4. Smash up the strawberry with your hand and fingers for 1-2 minutes.
5. Open bag and add 10 ml of the Extraction Buffer to the bag and zip it closed again. Try to get out as much air as you can.
6. Mash the strawberry pulp with the buffer again with your fingers for 1 minute.

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- What does salt do to a cell?
  - What does soap do to a cell?
  - Why would you mush the pulp for a minute instead of 15 minutes?
7. Use the scissors to make a small cut across a lower corner of the bag. Squeeze the extract (strawberry mush) from the bag onto the cheesecloth in the funnel and let it drip into the test tube.
  8. Filter the strawberry mush to a test tube so that it is 1/4-1/3 full.
  9. **Slowly** squirt or pour **cold isopropanol** (rubbing alcohol) down the **side** of the test tube until it is doubled in volume. You should have a red bottom layer and a clear top layer.
  10. Make observations.
    - What is happening in the top layer?
    - Can you see the DNA? What does it look like?
    - Why do you think the DNA is appearing?
  11. Dip the bamboo skewer (or glass rod with a bent tip) into the test tube where the alcohol and strawberry extract layers meet and spool out the precipitated DNA!
  12. Make observations.
    - What is the color of your strawberry DNA?
    - Is it pure DNA?
    - What else could be attached to it?
    - Why did some people extract white and some pink DNA?
    - Why did some people get more DNA than others?