BEAM Lesson Plan for Maynard Thursdays

Purpose

The purpose of the experiment is demonstrate that DNA is the code for life that is contained in all living organisms, and that DNA can be extracted from cells through the demonstrated extraction process. This exercise also demonstrates filtration and precipitation as ways to purify compounds out of chemical solutions.

Materials

- 1 strawberry (per group)
- water
- 1 tablespoon detergent (per group)
- 1 teaspoon table salt (per group)
- 20 mL rubbing alcohol (per group)
- 1 plastic cup (per group)
- 1 plastic spoon (per group)
- measuring cup
- coffee filter (per group)
- plastic ziplock bag (per group)
- large paper clip (per group)

*There are approximately 12 kids at Maynard

Procedure

Part I: Extraction Buffer Preparation

1. This should be done before the lesson.
2. Mix 900 mL of water with 50 mL of detergent.
3. Add 2 table spoons of salt. Mix thoroughly. This provides enough extraction buffer solution for roughly 10 DNA extractions.

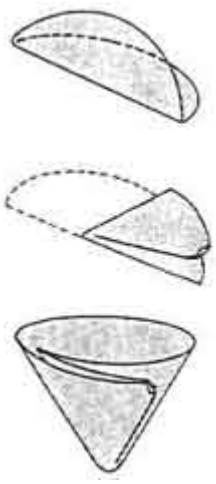
Part II: DNA Extraction

1. Place one strawberry in Ziplock bag.

2. With the bag sealed, mash the strawberry. Take care not to break the bag. Do this for about 2 minutes.

3. Add 10 mL of the extraction buffer (salt and detergent solution prepared beforehand). Mash contents of bag for an additional minute.

4. Form a funnel from the coffee filter paper and place it on the cup.



5. Pour mixture in bag into cup through the filter paper. Let the mixture drip slowly.

6. Remove the filter. Pour 20 mL of cold rubbing alcohol into the cup. Observe.

7. Bend the paper clip to form a hook. Using this hook, "fish" out the material that forms between the 2 layers of the solution.