Name: Date:

HANDS-ON LAB

Extracting DNA

While scientists use DNA extraction kits available from biotechnology companies, you can actually extract DNA using common ingredients found in your own home. During a DNA extraction, a detergent is used to burst open cells so that the DNA is released into solution. Then alcohol is added to the solution to cause the DNA to precipitate out. In this activity, you will extract DNA from a strawberry. Unlike human cells, which contain two copies of each chromosome, a strawberry has eight copies of each chromosome in its cells.

PREDICT

What do you think DNA extracted from a strawberry looks like?

MATERIALS

- cheesecloth
- dish soap, liquid
- funnel
- isopropyl alcohol (91%)
- salt
- strawberry (1 per student)
- teaspoon
- test tube with stopper
- water
- wood skewer
- zipper bag, plastic, quart size

PROCEDURE

1. Place the strawberry in a plastic zipper bag. Zip the bag closed.
2. Gently crush the strawberry by squeezing it inside the closed bag for 2 minutes.
3. Carefully open the bag and add 1 teaspoon water, 1 teaspoon liquid dish soap, and a pinch of salt. Zip the bag closed. Knead for 1 minute.
4. Pour the strawberry mixture into a cheesecloth-lined funnel that is set into a test tube to filter out the solids.
5. Open the test tube lid and tilt it in your hand. Very slowly, pour a small amount of alcohol down the inside of the test tube just until there is a thin layer floating on top of the solution.
6. Observe the test tube. You should see a band of white, gooey material forming just beneath the layer of alcohol. Gently put the skewer into the test tube and twirl it in the white material in one direction only. Wind the material around the skewer, then carefully draw it up and out of the test tube.
7. Record your observations.

ANALYZE

1. Describe the appearance of your DNA sample.

2. How is your DNA sample similar to and different from Watson and Crick's model?

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3. The sample of DNA came from many strawberry cells. Do you think you would have been able to get the same result from your experiment if you had extracted DNA from a single cell? Explain your answer.

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