

Lesson 4.9

DNA Extraction

Name

Date

Period

Key Terms



Engage



1. What is wheat germ?
2. Where does wheat germ come from?
3. What kind of cells makeup wheat germ?
4. Where is the DNA found in these cells?
5. Can you see DNA with the naked eye?



Explore I

Your instructor has provided you all the materials you need to extract DNA. Follow the steps below and answer the questions as you progress through the lab.

Step 1: Using a graduated cylinder, add 10 ml of water to a 50 ml conical tube. Add 1 g (a BIG pinch) of raw wheat germ. Label your cylinder with your initials and/or first name.

Step 2: Gently stir the contents for 1 minute with a coffee stirrer

Step 3: Using a disposable pipette, add 3 ml of 20% Palmolive soap to the tube with water and wheat germ. Put the pipette back into the soap tube.

 **Explain I**

6. When would you use Palmolive soap at home? Explain what you use it for at home?
7. Think back to your answer for #4. What structures in the cell surround the nucleus and the entire cell?
8. These structures are composed of lipids. Why do you think Palmolive is useful for DNA extraction?

 **Explore II**

Step 4: Mix the contents by gently swirling the closed 50 ml conical tube for a couple of seconds (do not shake vigorously!!). Loosen the cap slightly before placing tube in hot water bath (be careful the water is hot).

Step 5: Let sit for at least 5 minutes in hot water.

Step 6: While the tubes are heating, label a 1.5 ml microfuge tube. Mark this tube with the same initials and/or first name you used in step 1.

Step 7: Before removing the tube from the hot water, fill another pipette with 1 ml of alcohol so you are prepared for step 8

Step 8: Bring 50 ml conical tube back to table and add 3 ml of **cold** alcohol gently to the side of the tube. Don't mix the layers. Put the pipette back into the alcohol.

9. Record your observations. You may wish to include a picture to demonstrate what you are seeing:

Step 9: After waiting a few minutes to allow the DNA to precipitate, remove the DNA by using an inoculation loop and place the DNA into the microfuge tube (which contains alcohol). Try not to take up any wheat germ debris that is present.

10. Record color: Record quantity: Record texture:

 **Explain III**

11. Explain what happened in the final step when you added the alcohol to your wheat germ extract. (Hint: DNA is soluble in water, but not in alcohol.)
12. Do you think the DNA from the cells in your body will look the same as the DNA you just extracted from the wheat germ? Explain why or why not.
13. A person cannot see a single cotton thread 100 feet away, but if you wound thousands of threads together into a rope it would be visible 100 feet away. How is this statement analogous to your DNA extraction? Explain.