Name: _____ Date: _____

Lab v1: Extracting Genetic Material

Part 1: Formulate your hypothesis.

A. Write down your question.

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B. Make a prediction. Will your sample contain genetic material? Why or why not?

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C. Create a hypothesis related to whether plants have genetic material.

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Part 2: Prepare for experimentation.

A. Gather materials for your group.

B. Put on indirectly vented chemical-splash goggles, a nonlatex apron, and vinyl or nitrile gloves.

Part 3: Extract genetic material from inside cells.

1. Place the sample you are investigating in the 1 QT heavy-duty ziplock bag. Remove the air and seal the bag.
2. Crush the sample with your hands until there are no chunks. ***Be careful to not break the bag while mushing!***
3. Add 20 mL of warm salt water into the bag with the crushed-up sample. Make sure the salt water is not too hot so it does not melt the bag. Remove the air and seal the bag.
4. Gently mix the salt water with the sample in the sealed bag.
5. Add 1 spoonful of dish soap to the bag. Remove the air and seal the bag.

6. Gently but thoroughly mix the soap with the sample. Be careful not to make too many suds!
7. Put a piece of cheesecloth over the top of a 100 mL beaker (or similar container) and secure it with a rubber band. Then gently push down on the top, making a little pocket. You will use this to strain your sample.

8. Slowly pour your sample through the cheesecloth. Be careful not to overfill. You may have to wait while some liquid flows through to pour the entire sample. (Note, you may need to ask your teacher for another piece of cheesecloth if yours gets clogged before it finishes straining.)
9. After the sample has completely flowed through the cheesecloth, remove the rubber band and cheesecloth from the container and discard the cheesecloth into the trash.
10. Add a pinch of meat tenderizer to the solution and stir very gently to mix.
11. Slowly pour 20 mL of ice-cold alcohol into the beaker with the sample. Tilt the beaker slightly and pour down the side of the beaker, being careful *not* to mix the layers.
12. If genetic material is present in the sample, you will see little white strands forming in between the layers of the sample and the alcohol.
13. Gently use a wooden skewer to lift the strands up. You can slowly turn the skewer to spool and collect the genetic material.
14. Clean up your lab station when your group is finished.
15. Record your group's results in the class data table, then answer the making sense questions in part 4.

Part 4: Make sense of your results.

A. What claim can you make about whether plants have genetic material? What is your evidence? Explain why the evidence does or does not support your claim.

B. We know that genetic material is much smaller than a cell. We also know the material is inside the cells that we often cannot even see without using a microscope. Given that, how is it possible that we can see the genetic material in this investigation?