**DNA Extraction Lab**

**Materials:**  
1 Ziploc bag, 3 Cups, 1 spoon, 1 coffee filter, eppendorf tube

1 Strawberry *(they have 8 copies of each chromosome in each of their cells. "Octoploid" = 8n)*100mL DNA Extraction Solution  
 100mL water  
 1 small squeeze of detergent *(breaks down cell membrane and nuclear membrane)*  
 1/4 teaspoon of salt *(prevents proteins from sticking to the DNA)*  
25 mL cold rubbing alcohol (91%) *(makes the DNA clump together and separate from the solution)*  
  
**Answer the following after the DNA extraction:**

1) What are at least 3 variables (besides the amount of strawberries) we could intentionally change that might affect the amount of DNA we extract? Circle the one you would change if you were to continue with this experiment.

2) Based on the variable you circled above, identify the **dependent** variable and the **independent** variable of your hypothetical experiment; and explain how you know which is which!

3) Explain why you should only change **ONE** variable at a time.

4) What do we call all of the other variables that we would **keep the same**?

5) Explain why you would ideally repeat the exact same experiment multiple times (e.g. 3 trials) even if you don’t mess up.

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**Procedures:**  
1) Obtain 1 ziploc bag, 1 spoon, 3 cups, 1 coffee filter, and 1 eppendorf tube.

2) Remove the leaves from the strawberry, put the strawberry into the ziploc bag, remove as much air as possible, and seal the bag tightly.  
3) Squish the strawberry with your fingers (so you don’t pop the bag) until it’s liquefied.  
4) While one person is squishing the strawberry, make the DNA extraction solution and slowly stir it until the salt and soap is dissolved in the water.   
5) Pour the entire solution into the bag, remove as much air as possible, reseal it, and continue squishing and mixing for at least 2 minutes.

6) Pour the contents of the bag through the coffee filter and into a new cup. Be patient! Filtering the chunks out of the solution takes several minutes!

7) Clean up: put the strawberry leaves and used coffee filter into the used ziploc bag, seal it, and throw it away.  
8) Slowly pour 25mL of cold rubbing alcohol into the cup with the filtered solution, and then let it sit undisturbed for at least 3 minutes.  
9) Record observations (describe what you see happening, and feel free to take pictures).

10) Take the DNA out of the solution with your fingers or the handle of the spoon (you can feel it if you want) and put it into an eppendorf tube if someone wants to keep it.

11) Clean up: Pour the contents of the cup into the waste container, rinse and dry the cup and spoon, and wipe up any messes on your desks.

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