

Extraction of DNA from Wheat Germ: Understand the stringiness of DNA by viewing and drawing**A. Background:**

- ___ 1. Wheat germ is the part of the wheat kernel (seed) that grows into a new wheat plant (embryo).
- ___ 2. **DNA** is _____ and **found in each cell nucleus** as **chromatin** or **chromosomes**.
- ___ 3. We can extract DNA because
 - ___ a) Detergent, water & stirring helps break down cells so the DNA comes out.
 - ___ b) DNA absorbs water like a sponge, so it gets large enough for us to see.
 - ___ c) But, DNA is **dissolved** in the water which means makes a **solution** and we can't see it.
 - ___ d) Then, we can see DNA in alcohol because it is an **insoluble precipitate** (doesn't dissolve).
(Think: Precipitation (rain) is water in air that is not dissolved.)

B. Instructions: Read to each other, but everyone does their own.

- ___ 4. Place 1 teaspoon of raw wheat germ in a test tube.
- ___ 5. Add 20 ml of hot tap water. Mix with straw constantly, for 3 minutes.
- ___ 6. Add a scant (not quite) ¼ teaspoon of liquid soap or detergent (Dawn).
Mix **gently** every minute, for 5 minutes, trying not to create foam.
- ___ 7. Use a twisted paper towel to remove any foam from the top of the solution.
Pour **only** the watery part (without wheat germ) into a clean test tube.
- ___ 8. Obtain about 14 ml of isopropyl (rubbing) alcohol.
- ___ 9. Tilt the test tube of water solution at an angle. SLOWLY pour the alcohol down the side of the test tube so lays on top of the solution. DO NOT mix the layers together.
- ___ 10. Let the test tube sit for 5 or more minutes or until you see DNA. **(Read 2d above, again.)**
As you wait, prepare a folded paper towel for your DNA to dry. (More points later for dry DNA.)
 - ___ a) DNA should **precipitate** (form an insoluble solid in a liquid) when it meets the alcohol.
 - ___ b) The DNA is **dissolved** in the water, so we _____ (can or can't?) see it.
 - ___ c) DNA is **insoluble** (_____ dissolve) in alcohol, so DNA should show up in the alcohol.
 - ___ d) DNA moves ____ (↑↓) in water, so its density is ____ (more or less) than 1.
 Describe ↓ and draw → your observations. Draw the **actual outline** with some detail →

Have Checked HERE for LAB points.

- ___ 11. Use a paper clip hook to gently lift and move **ONLY the DNA** to a your labeled paper towel to dry. Place it in the tray for your class to dry.
- ___ 12. **Use only the cleanup sink, NOT your lab sink.**
FIRST: **Pour the remaining wheat into the waste basket.**
SECOND: **Rinse all test tubes and stirring straws in the clean-up sink over the strainer.**
THEN: **Leave the rinsed test tubes at the cleanup sink. Ask. Clean & dry your table.**
- ___ 13. Describe the DNA. _____
Describe what you expect the DNA to look like when it is dry _____

(Remember, **cells are microscopic**, meaning you need a microscope to see them. **DNA is found inside the nucleus, so you usually can't see it even with our microscopes.**)

- ___ 14. When dry, describe the dry DNA. _____
Use a flap of tape to attach paper towel with DNA to this paper. **Dry DNA Points:**

