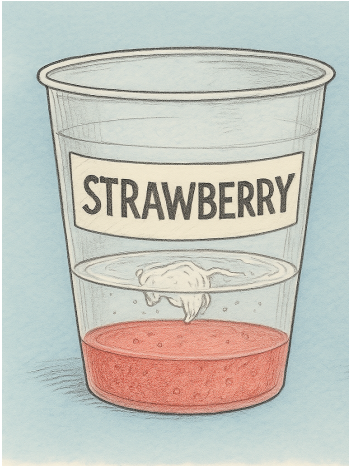


3.5: COMPARING STRAWBERRY AND BANANA DNA ANSWER KEY

Strawberry and Banana DNA Extraction

Investigation Observation Form

Record your observations in the space below.

	Strawberry	Banana
Draw what you observe..	 You may also have a close-up drawing of the DNA after you remove it from the liquid.	 You may also have a close-up drawing of the DNA after you remove it from the liquid.
Describe what you observed. (color, texture, shape, amount of DNA)	- White - Slimy - Looks like wet cotton or spider web silk - The DNA was mostly in one area of the isopropyl alcohol layer - Clumped easily on the toothpick - Looked stringy under a hand lens	- White - Slimy - Looks like wet cotton or spider web silk - The DNA was spread throughout the isopropyl alcohol layer - Clumped easily on the toothpick - Looked stringy under a hand lens

Investigation Reflection

1. The dishwashing soap in the extraction solution breaks open the cell membrane and the organelle membranes, including the nuclear membrane. Why is it necessary to collect the DNA from the strawberry and the banana?
We need to break open the membranes because the DNA is inside the nucleus of the cell. Dish soap helps pop open the cell and nuclear membranes so the DNA can come out. Without breaking the membranes, we wouldn't be able to get the DNA out and see it.
2. DNA is a microscopic molecule that is too small to be seen with the naked eye.. Why do you think you were able to see strawberry and banana DNA today? (Hint: Look back at the procedure to see why we use salt in the extraction solution.)
Imagine trying to look at a single piece of thread from a few feet away. You might not be able to see it at all! If a bunch of threads is clumped together or woven into a rope, then it would be visible from a few feet away. This is similar to what happens when salt combines with the mashed fruit. DNA is super tiny, but the salt made the DNA strands stick to each other, and that made it easier to see. Instead of seeing just one tiny strand, we saw a whole bunch all together.
3. Which fruit produced more visible DNA? Why do you think that happened?
The strawberry should have produced more visible DNA than the banana. Is this what you observed? If not, what might have happened to cause a different result? For example, maybe you didn't mash the strawberry well enough, and lots of DNA was left in the big pieces that got filtered out. Or maybe you didn't check to make sure there were equal amounts of the strawberry liquid and banana liquid before adding the isopropyl alcohol. If you have enough materials left over, try repeating the investigation to see what happens.

As you keep moving through the modules, you'll learn why there is more DNA in the strawberry mixture than in the banana mixture.
4. Why might scientists want to extract DNA from plants, animals, or people in real life?
Scientists extract DNA to study it and learn about how living things work. It can help them find out what traits an organism has, or even fix problems in the DNA. It's also used in things like solving crimes, growing better crops, or studying diseases. You'll learn a lot more about this in the upcoming modules.

5. If scientists can extract DNA easily, should they be allowed to study human DNA from anyone? How would you feel if someone extracted your DNA without your permission?

There is no right answer to this question. You might want to come back to this question later to see if your ideas change as you learn more about DNA and genetic engineering.