Boonshoft Museum of Discovery

Strawberry DNA Extraction

Materials

- Sandwich bag
- One strawberry (fresh or thawed)
- Dish soap
- Water, 20 ml (2 tablespoons)
- Table salt
- Chilled rubbing alcohol

What to do

1. Place one strawberry in a bag
2. Measure 20 ml of water, and pour it into the bag
3. Add a small squirt of dish soap

   What do you think the soap will do? Why do you normally use soap?
4. Add a dash of salt
5. Close bag securely and mash for 30 seconds
6. Open the bag and slowly pour the chilled rubbing alcohol down the inside of the bag

   Where does the alcohol settle in the bag?

What is happening?

DNA is short for the chemical name **d**eoxyribo**n**ucleic **a**cid. DNA is a set of chemical instructions found within the cells of all living things. DNA is like the software that runs a computer or a recipe for making a cake. DNA is the chemical instructions for why we look the way we do and why other plants and animals look the way they do.

The addition of dish soap helps break into the strawberry's cells. Cells are made of fat and protein, so the soap opens those cell. The salt helps the DNA to clump together.

The rubbing alcohol floats on the top of the strawberry mush, because it is less dense, making it less heavy. After a few moments you should notice a substance that looks like snot in the alcohol: this is the DNA of the strawberry! If you had done the same set of steps with some of your own cheek cells, it would look the same. The differences between these two types of DNA are too small for our eyes to see.

When thinking about where DNA is found, many people will say that DNA is found in blood, specifically red blood cells. This may be due to the fact that TV shows always collect blood samples. However, mature red blood cells do not contain a nucleus – the part of the cell that DNA is stored in – and therefore do not contain DNA! However, there are many other cells found in plasma (the fluid that carries red blood cells and other cells throughout the body) that have a nucleus to supply scientists with DNA.

Lesson Extension

What might happen if you repeat the experiment using a different type of fruit? To continue the experiment, try using a kiwi, banana, or raspberry. To have accurate observations to compare fruits, follow the same steps as the original experiment.

Ohio Early Learning and Development Standards

Cognition and General Science/Science/Science Inquiry and Application/Inquiry

Ohio Learning Standards

C.IM.1, B.H.2, PS.M.5

Next Generation Science Standards

5-PS1-4, MS-PS1-2