

DNA

All living things have DNA (deoxyribonucleic acid): the chemical instructions for how to make a living thing.

Optional - You may try to extract the DNA from a strawberry at home with permission from your parents and an adult present. Written directions are on the next page. -Mrs. Ott

Watch this teacher's video by clicking the link below. (4:36 min)

https://www.youtube.com/watch?time_continue=8&v=d2lBcOI22uI&feature=emb_logo

- **Soap** helps to dissolve the cell membranes.
- **Salt** is added to release the DNA strands by breaking up protein chains.
- DNA is not soluble in **rubbing alcohol**, especially when the alcohol is ice cold, therefore, the DNA will clump together and become visible. The colder the rubbing alcohol, the less soluble the DNA will be in it, which is why it is important for the rubbing alcohol to be kept cold.

There is also an optional worksheet below to help you understand that DNA looks like a twisted ladder and the rungs of the ladder are the code. We will learn more about this in the coming weeks. – Mrs. Ott

You do not need to turn this in.



DNA EXTRACTION

Name: _____

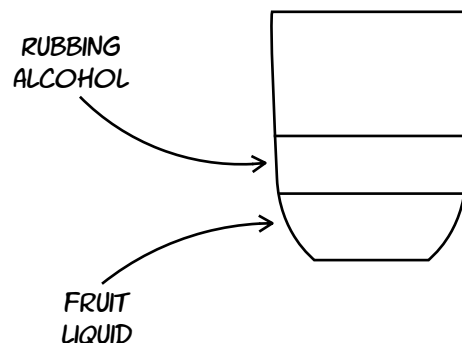
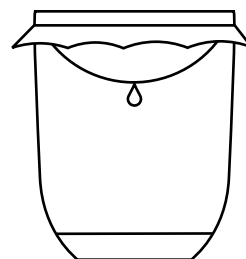
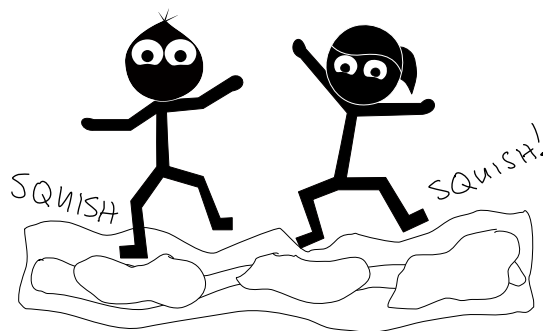
MATERIALS

Fruit (strawberry or blueberries)
Warm water
Salt
Concentrated dish soap

Rubbing alcohol
Coffee filter **or sieve with paper towel or just sieve**
Cup or glass jar
Plastic bag for squishing fruit (optional)

METHOD - ALSO CALLED THE PROTOCOL OR THE INSTRUCTIONS!

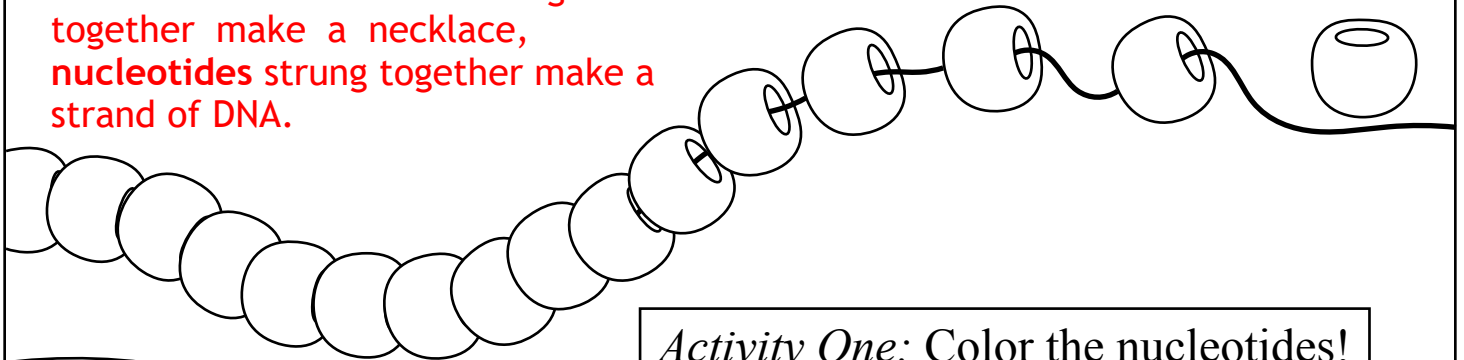
1. Place your rubbing alcohol in the fridge or freezer.
2. Squish the fruit thoroughly.
3. Make your extraction solution by mixing together:
 - 1/2 cup warm water
 - 1 tsp salt
 - 2 tsp concentrated dish soap
4. Add 2 to 3 teaspoons of extraction solution to your squished fruit and stir gently for one minute.
5. Pour the fruit mixture into a coffee filter and let sit for 5 minutes. **VERY GENTLY** close the bag and press to extract more liquid. Be careful not to press too hard. If the bag breaks you will need to strain the liquid again.
6. Take the rubbing alcohol out from the freezer and carefully pour a layer of rubbing alcohol on top of the layer of fruit liquid. The goal is for the amount of rubbing alcohol to be roughly equal to the amount of fruit liquid. But it does not need to be exact.
7. Observe the container and watch for a white foamy substance to form on the surface of the rubbing alcohol. This is your DNA!



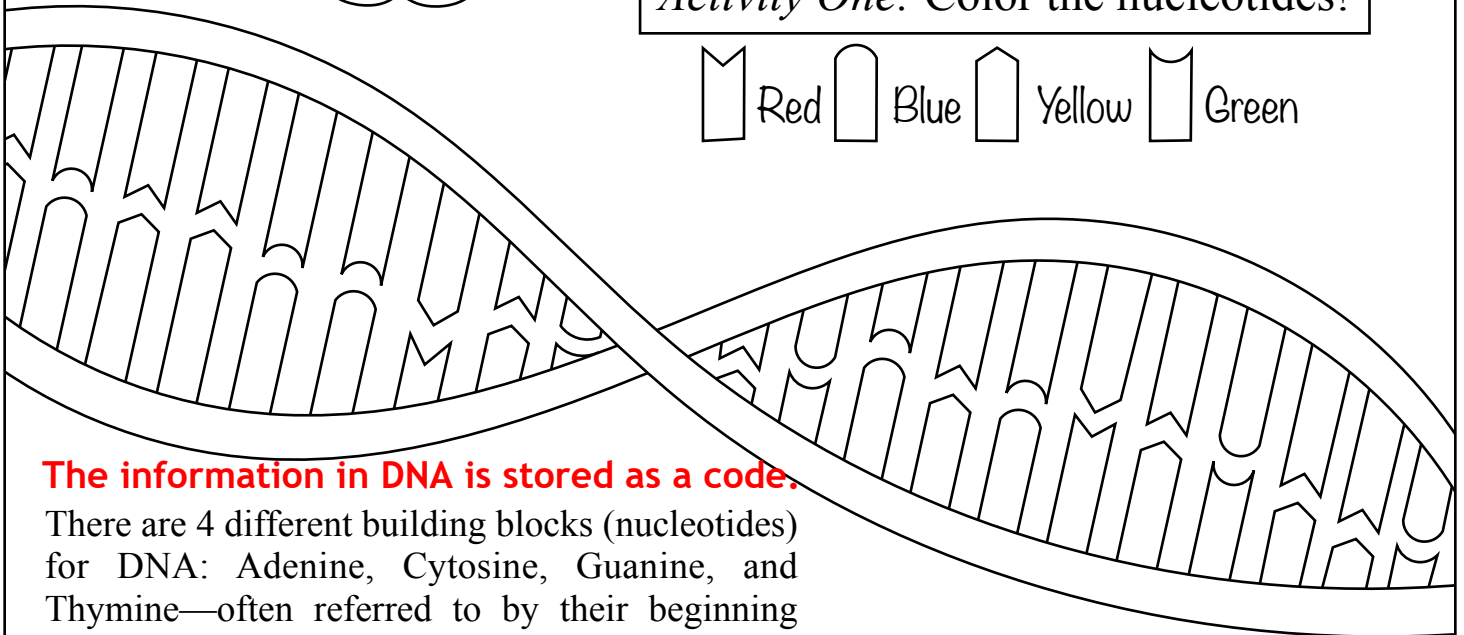
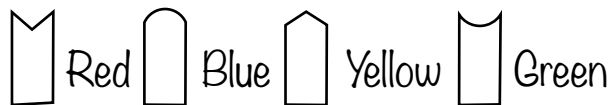
DNA THE STUFF INSIDE ALL LIVING THINGS!

Name: _____

DNA is a LONG strand of repeating units. Just like beads strung together make a necklace, **nucleotides** strung together make a strand of DNA.



Activity One: Color the nucleotides!



The information in DNA is stored as a code.

There are 4 different building blocks (nucleotides) for DNA: Adenine, Cytosine, Guanine, and Thymine—often referred to by their beginning letters: **A**, **C**, **G**, and **T**. In the part you just colored, did you notice how the blue always paired with green and the red always paired with yellow? This is how things are in the cell too! **A** always pairs with **T**, and **G** always pairs with **C**.

Activity Two: Circle the things that have DNA:

Hint: Only living things have DNA. -Mrs. Ott

