



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

learn about the role of DNA and observe DNA from a piece of fruit!



Supplies Required:

Sliced fruit (e.g. kiwi, strawberries, bananas)
Coffee filter or fine mesh strainer
Towels or newspaper to cover workspace
Water
Salt

Shampoo
Spoon
Cups
Chilled rubbing alcohol
Paperclip or popsicle stick

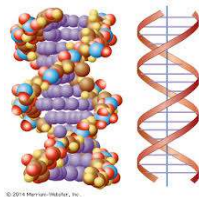
Video

Learn how to extract DNA from strawberries: <https://tinyurl.com/nv529uq>

Overview

DNA stands for deoxyribonucleic acid and is one of the two types of nucleic acid in cells. Humans are made up of many, many cells that we can't see and each cell has a job. Some clusters of cells make up our muscles, some make up our bones—and all together they make our bodies! But how does each cell know what to do? That's where DNA comes in. It tells the cells what to do. DNA is like the boss of the company. It gives cells instructions that it passes down in the form of codons, which is a three-block code. These codes are made from a string of four different letters which have best friends they favor and prefer to hold hands with. A likes T, and G likes C, and when put together they become instructions for the cells.

Chromosomes and genes are also made of DNA! You receive these from your parents—half of these chromosomes come from one parent and half come from the other parent. Each of your parents has two copies of each of their genes, and each parent passes along just one copy to make up the genes you have. Genes determine traits such as the color of your hair, how tall you are, and the color of your eyes. If you have one parent that is tall, and one that is short, and you are tall, you received the "tall gene" from your tall parent!



Instructions

1. Start by covering your workspace with towels or newspaper.
2. Slice and rinse off all your fruit.
3. Put a handful of fruit in the cup and use your fork to mash the fruit up until it is smooth.
4. Add water to your cup of fruit until you have doubled the volume.
5. Add two squirts of shampoo into your fruit and water mixture.
6. Add a teaspoon of salt and gently stir--try not to create the foam from the shampoo.
7. Use your coffee filter to strain the mixture into a second cup, you can throw away the fruit but keep the liquid.
8. Add an equal amount of cold rubbing alcohol to the liquid in the cup.
9. The alcohol will form a layer on top of the fruit liquid. Between the layers there should be a layer of clear goopy substance. This is the DNA!
10. Take a paperclip or a popsicle stick and fish it out. Make observations!

Additional Resources

Think About It! What did you need to do in order to separate the DNA from the fruit? Fruit has DNA, you have DNA, all living things have DNA! How is your DNA similar to fruit? How is it different? Think about your DNA and your traits. What traits are similar to others that share some of your DNA (family members)? What genes don't you share with certain family members? Think about two different species of animals. Do you think they share DNA? Explain your thinking.

1. Learn about DNA with Dr. Binocs: <https://tinyurl.com/yynkhfts>
2. Extract your OWN DNA! <https://tinyurl.com/y7w8ot5n>
3. How does DNA replicate? <https://tinyurl.com/bkzb55d>
4. Read and learn more about genetics with Ducksters: <https://tinyurl.com/wthsv2b>
5. Learn more about genes with the Amoeba Sisters: <https://tinyurl.com/y8zfrldt>
6. Learn more about traits in your family with our Census Family Ancestry Activity: <https://tinyurl.com/y9nfwttq>

Share It Out

Share on social media: Make a video showing the DNA extraction process. Share what you know about DNA with your friends and family on social media using the hashtags:

#DNAExtraction
#ProjectExploration
#StemAtHome

For more activities like this one, go to www.projectexploration.org/stemhome. If you're interested in learning more about Project Exploration and our free events, programs, and activities, please find us on social media and be sure to follow!



Call or text us for help: 312-772-6634

www.projectexploration.org