

Hypothesis

My hypothesis is that the DNA will show and will just be moving around in the substance that we create. I also think that with the DNA I will also see other kinds of particles that are in a chicken and in a strawberries. I also think that the strawberry DNA and the chicken DNA will be different because they are different organisms.

Research

What is DNA? DNA stands for deoxyribonucleic acid. DNA is like instructions that tells our bodies and other living organisms how to grow, work, stay healthy, and most of all live. It is found in every living thing, from animals like chickens to plants like strawberries. DNA decides things like our eye color, how tall we will be, and even the color of plants. Why do People Extract DNA? Scientists extract DNA to study it and understand how living organisms work. By studying DNA, scientists can learn about things like genetics. Genetic traits are specific things about us and make up who we are. For example, we might have curly hair because our parents have curly hair. Extracting DNA can also be used to help solve crimes by searching for DNA of the criminal.

DNA Extraction from Chicken Liver. Chicken liver like all other animal tissues, has DNA inside of it. When we take out the DNA from chicken liver, we are separating it from other parts of the cell so we can see it more clearly. We can use household items like liquid detergent and rubbing alcohol to help separate the DNA from the rest of the cell to allow us to see it better.

DNA Extraction from Strawberries. Strawberries also contain DNA even though they are a plant. They have tiny cells that hold DNA inside. To extract DNA from strawberries, we mush them up and then separate the DNA from the other parts of the cell using detergent and alcohol. Since plant DNA and animal DNA are different, the DNA will look different from the chicken when we see it in the microscope.

How DNA Extraction Works When we mash up the chicken liver or strawberries and mix them with detergent, the detergent breaks open the cells and releases the DNA. The meat tenderizer in the chicken liver experiment helps break down proteins that can get in the way of seeing the DNA.

Why Do We Use Rubbing Alcohol? Rubbing alcohol is used in both experiments because DNA does not dissolve in alcohol. When we pour alcohol into the solution the DNA clumps together and becomes visible. This lets us see the DNA as a stringy white material floating on top of the liquid.

Why do we use a Microscope? After we extract the DNA, we can look at it under a microscope. Microscopes help us see tiny things that we can't see with our eyes alone. Looking at DNA under a microscope allows us to see it and analyze it in more depth.

Variables

In this project the independent variable is the strawberries and the dependent variable is the amount of the DNA that will be extracted and the controlled variable is what the materials and the environment that was used. The independent variable is the chicken liver and the dependent variable is the amount of the DNA that was extracted and the controlled variable is the materials and the chemical that are used.

Chicken Liver procedure

1. Take $\frac{1}{2}$ cup raw chicken liver and also $\frac{1}{4}$ cup of water and blend it until it is soupy
2. Put the soupy chicken liver in a strainer and strain it in a measuring cup
3. Add one third of liquid detergent to how make solution you have made
4. Add 1 tablespoon of meat tenderizer to the solution and stir for 7 minutes do not stir fast be patient
5. Put the solution in a glass
6. Tilt the glass and put rubbing alcohol the same amount of the solution then wait 30 seconds and then see closely after 10 minutes a weird material will form on the top of the glass and that is the isolated DNA
7. Next fill a small jar with alcohol
8. Take a paper clip make it straight and from a small hook at the end
9. Then dip the small hook in to the solution where the alcohol and water meet next carefully grab some of the water that will be containing the DNA into the alcohol layer
10. Wait for a few minutes then remove the DNA that will float to the top next place the the DNA onto a microscope then you will see the DNA sample

Strawberry procedure

1. Take 4 strawberries and mush them in a zip loc bag until they are in a soupy consistency
2. Next take 2 teaspoons of liquid detergent and half teaspoon of salt gently mix it with a spoon
3. Next pour the solution in to the bag that you mush the strawberries in and carefully mix do not mix harshly no bubbles should appear
4. Take a coffee filter and places it on top of a cup and strain the mixer but make sure to not be too harsh or you will break the DNA cells
5. Next take some rubbing alcohol and pour the same amount of it as the strawberry solution in the cup
6. Next you will see the two different solution separate be patient and wait for 10 minutes you will soon see a weird material form at the top of the cup
7. Take the paper clip and straighten it then form it into a hook and dip it in the cup wear the two solutions meet and grab some of that weird material
8. Once you grab the weird material you can stared to analyze it and you can put it in a microscope to see the DNA of a strawberry

Observation

CHICKEN LIVER: The chicken DNA was every interesting when i poured the rubbing alcohol on the chicken solution there was a few bubbles that where scattered and weird pointy triangles where coming out in the shape of a strange building bottom to the top of the measuring cup. When the chicken DNA was removed from that spot it changed and looked more like shredded white meat.

STRAWBERRY: . The strawberry DNA was like a white cloud and was spread everywhere in the cup but when i held it with the paper clip it came all together and was a big white blob it was also like rubber.

Analyzing

overall, this project was very interesting and fun this project also taught how to extract DNA from different organisms and also taught me a lot about DNA and how it is in everyones body and helps them be how the truly are. this project also made me feel like i was a mad scientist and that was ever pleasing.

Conclusion

My hypothesis was correct under the microscope the strawberry DNA and the chicken DNA showed up in different ways. The strawberry DNA was like a white cloud and was spread everywhere in the cup but when i held it with the paper clip it came all together. The chicken DNA was every interesting when i poured the rubbing alcohol on the chicken solution there was a few bubbles that where scattered and weird pointy triangles where coming out in the shape of a strange building. When the chicken DNA was removed from that spot it changed and looked more like shredded white meat.

Application

this will apply to the future by letting us know what kind of DNA is in are daily foods like say you eat chicken daily this wood apply to you because you can see what kind of DNA you are eating same thing goes to strawberries if you live somewhere where you eat strawberries on a daily then this would apply to you also this could help in the future by identifying what kind of disease or virus is going around the world.

Source Of Error

this project had only one error and that was when i was trying to extract the DNA of the strawberry at my first attempt it did not work because i was using a different type of liquid detergent and it made a lot of bubble which made it every hard for the DNA to appear and then the second time i used a different liquid detergent and it worked the DNA showed up at the top of the cup

Bibliography

- <https://www.youtube.com/watch?v=hOpu4iN5Bh4>
- [https://www.genome.gov/sites/default/files/media/files/2023-04/How to extract DNA from a strawberry 508.pdf](https://www.genome.gov/sites/default/files/media/files/2023-04/How_to_extract_DNA_from_a_strawberry_508.pdf)
- <https://prezi.com/ctqyhasneysv/how-to-get-dna-from-a-chicken-liver/>

Acknowledgments

my sister Zoha got me the chicken liver and my father got the rubbing alcohol and my mother gave me the liquid detergents and my friend Jannat for helping me in making the slides the rest i had

Materials For Chicken Liver

Liquid detergent

Raw chicken liver

Meat tenderizer

Strainer

Blender

Glass cup

Rubbing alcohol

Jar

Measuring cup

Spoon

Microscope

paper clip

Materials For Strawberries

Frozen strawberries

Ziploc bag

Liquid detergent

Salt

Measuring cup

Water

Cup

Coffee filter

Paper clip

Spoon

Rubbing alcohol

Microscope

Definition

DNA: the meaning of DNA is the molecule that carries genetic information for the development of an organism.

Isolated DNA: the process of isolating DNA from the cells of an organism.

DNA stands for: deoxyribonucleic acid

dee · aak · see · rai · bow · noo · klay · uhk · a · suhd

Questions

Can You Extract DNA From Chicken liver and strawberries using house hold items ?

