

Contact Information

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Dec 22, 2024- Started our slides and started researching.

Dec 22, 2024- -[science buddies](#)

Strawberries are octoploid

Materials needed for process of extraction

Measuring cup

measuring spoons

isopropyl Alcohol

salt

water

dish soap

2 small cups

small bowl

tall glass

fruit

Ziploc skewer

strainer

Procedure

Add 2 tablespoons and 3 teaspoons of water into a bowl.

Add 1 tablespoon of liquid dish soap, ½ teaspoon of salt and mix well, to make the extraction liquid

Put 3 strawberries into a ziplock bag and smash them.

Add 3 tablespoons of the extraction liquid into the bag and mix it for 1 minute.

Sieve the strawberry mixture into a tall glass and transfer one half of the liquid into a small cup.

Slowly pour one half of cold isopropyl alcohol into the cup we have the strawberry liquid in and let it sit for 3 minutes.

Dec 22- Squishy Science [Squishy Science: Extract DNA from Smashed Strawberries](#)
Deoxyribonucleic acid is the blueprint of every living organism. DNA tells us how we develop look and function.

All living organisms have DNA, even tomatoes. Scientists study DNA for many reasons like to make new medicines and to help genetically modify crops. Scientists use DNA extraction kits to extract DNA while in our experiment we will be using household materials. Cells have a set of the same instructions this is called a genome. Strawberries have more DNA than other foods because they have eight copies of each genome.

Dec 22-What is DNA? (Dr. Binoc)

📺 [What Is DNA? | The Dr. Binocs Show - Best Learning Videos For Kids...](#)

Cells are small units in our bodies that make up all living things. They make up our skin bones and muscles. Nucleus is located inside of the cell.

It's like the brain or main control station of the cell and holds a repository of genetic information. Inside the nucleus we find chromosomes, they carry genetic information, and are passed down from the parents to an offspring meaning the reason you look like your parents is because you share the same DNA. One single molecule of DNA and some proteins are located in the chromosome. You might be wondering what DNA is, DNA is a molecule, (a group of atoms stuck together). It is the genetic code that forms all living things and determines what you look like. The DNA instructs the cells what to do with its companion amino acids which is an essential chemical in the cell. Amino acids come in 20 different shapes and sizes, these different amino acids link together forming proteins. These proteins combine with other chemicals helping create the cell. Proteins are found in places like the cell wall for humans. If proteins are not the perfect shape they do not function well so DNA tells the amino acids how to make the perfect protein.

Dec 26-  [How DNA Can Be Extracted From Fruit | Genetics | Biology | E...](#)

Reasoning behind the process of extraction

Mashing the fruit: Breaks the cells apart from each other and breaks down the cell wall.

Salt: helps DNA clump together in the final step.

Dish soap: used to break the membranes around the cell and nucleus to release the DNA.

Sieve the mixture: this step is to separate the fruit remains from the "fruit soup" which contains the strawberry cells

Isopropyl: since we still can't see the DNA because it is dissolved in the mixture we need to make it insoluble by pouring cold isopropyl (DNA is insoluble in isopropyl making it visible to the naked eye). We also added this to slow down the enzymes, the enzymes that break down the DNA

and are naturally present in the cell. In a typical cell, these enzymes are usually kept separate from the DNA since the nucleus is protecting the DNA but since we have ruptured the nucleus and cell membrane in the step earlier, the DNA has nothing protecting it. So we always have to leave the isopropyl alcohol in the fruit liquid.

Dec 26- <https://csef.usc.edu/History/2018/Projects/I0503.pdf>

A project similar to ours was conducted at the California Science and Engineering Fair in the year 2018 by Makena Bailey and Kyra Phaychanpheng's project. The project title was "Fruit Forensics: Extracting DNA from Fruits Using Different Cell Lysis Buffers". CLB was the special technique they used to break down the cell membrane to get the DNA. They used dish soap shampoo and detergents. Its main objective was to learn how to extract DNA from strawberries, bananas, and raspberries and to determine which fruit yields more DNA and which soap solution helps the fruits precipitate more DNA. Their hypothesis was that strawberries will have more DNA than raspberries and bananas and dish soap will produce the most DNA which was partially accurate.

After 27 tests, they found out that raspberries had the most DNA with an average of 0.21g and bananas had the least with the average being 0.089g and dish soap produced the most DNA.

Dec 26- [genomebc.ca kiwi DNA](http://genomebc.ca/kiwi-DNA)

We used this site only to compare the DNA extraction steps to determine how we would extract the DNA. All was similar and same to strawberry

Dec 27- [Banana DNA extraction](#)

We used this video to see and compare the steps of extracting the DNA and with this information given we found out the steps are practically the same.

Final list of materials

- Dish Soap
- Table salt
- Measuring cup
- Measuring spoons
- 99% Isopropyl Alcohol
- Kiwi
- Strawberry
- Banana
- Seve
- Plastic cups
- Zip lock bags
- Skewers
- Paper towels
- Water
- Milligram scale

Dec 28, 2024 - Conducted trails of all the fruits and noted the average

Dec 28-orange pippin fruit trees

Triploid means 3 sets of eat chromosome

Dec, 28- National Human Genome Research Institute [Cell Membrane](#)
([Plasma Membrane](#))

We used this website to get to know about the cell membrane and its functions. Cell membrane is a component of the Eukaryotic cell which has several functions. One is to transport nutrients into the cell and also to transport toxic substances out of the cell. Another is that the membrane of the cell, which would be the plasma membrane, will have proteins on it which interact with other cells.

Dec 28, 2025- National Human Genome Research Institute [Nucleus](#) 
Nucleus is a cellular component of the cell. The nucleus is located in the center of the cell and acts as a control center as it holds all the genetic information.

Dec 28, 2025- National Human Genome Research Institute [Chromosome](#)



Chromosomes are thread-like structures located in the nucleus of the cell. These are made of proteins and a single molecule of DNA. Their main role is to carry the genetic information cell to cell.

Jan 2, 2025 [Definition of cell - NCI Dictionary of Cancer Terms](#)

Cell is a small unit in our body that makes up all living things. The cell has 3 main parts, Cytoplasm, nucleus, and cell membrane. Cell contains many components inside of it which help it develop and also help our bodies in various ways.

Jan 2, 2025- Britannica [DNA | Definition, Discovery, Function, Bases, Facts, & ...](#)

DNA is a component of the cell which every living organism contains. It has many functions. There are two types of cells: Prokaryotic and Eukaryotic.

Dec,30- Hypothesis was created

Our hypothesis states that strawberries will have the most DNA compared to Banana and kiwi's. The reason being is that strawberries are octoploid meaning they have 8 sets of each chromosome.

Jan 5, 2025 - Completed slides (not edited, no teacher approval)

Jan,7 2025 started editing

Jan 16, 2025- Added sides like variables, research question

Jan 28, 2025 - Completed the slides with teachers approval and pasted it on the trifold

CYSF Research

Mar 12, 2025  DNA Extraction Explained

This video helped us have a better understanding of DNA extraction and get to know more about the Cell components.

[DNA EXTRACTION – Hands On Microbiology](#)

Mar 15, 2025 Maricopa community college [DNA EXTRACTION – Hands On Microbiology](#)

Helped us understand the components of the eukaryotic cell which are affected in the process of extraction.

Mar 15, 2025 Northern Arizona University website

Why strawberries yield more DNA? Strawberries have large genomes and are octoploid which means they have 8 sets of each chromosome.

Mar 18, 2025 Bc campus

[3.2 Comparing Prokaryotic and Eukaryotic Cells](#)

Components of the Eukaryotic cell and how they are different from prokaryotic cell components.

