

# Extracting dna from bananas

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Extracting DNA from Bananas In the Lab: Extracting DNA from Bananas, DNA was removed from bananas that had been blended with water in order to examine how DNA is seen from the naked eye. DNA stands for deoxyribonucleic acid, which is a nucleic acid that contains the sugar deoxyribose. DNA is made up of a series of monomers called nucleotides. Each nucleotide has three parts: a deoxyribose molecule, a phosphate group, and a nitrogenous base. In addition, there are four kinds of nitrogenous bases in DNA. Two of the nitrogenous bases, adenine and guanine, belong to a group of compounds known as purines.

The remaining two bases, cytosine and thymine, are known as pyrimidines. The actual DNA structure is seen as a double helix in which two strands are wound around each other. Each strand is made up of a chain of nucleotides. The two strands are held together by hydrogen bonds between adenine and thymine and between guanine and cytosine. In 1944, a group of scientists led by Canadian biologist Oswald Avery performed an experiment that would determine which molecule in a heat-killed bacterium was most important for transformation to occur.

Avery and the other scientists discovered that DNA is the nucleic acid that stores and transmits the genetic information from one generation of an organism to the next. Thus, DNA is present in all living organisms. It holds the instructions necessary for the organism to grow and function, and is passed on from generation to generation through heredity. During the procedure of the lab, a ratio of one banana per one cup (250 milliliters) of distilled water had to be mixed together in a blender. The solution had to be blended for 15 to 20 seconds, until it became a dense mixture.

In a separate five-ounce cup, a solution consisting of one teaspoon of shampoo and two pinches of salt was made. 20 milliliters (four teaspoons) of distilled water was then added to the mixture. Then the salt and shampoo had to be dissolved into the mixture by stirring slowly by avoiding foaming. Three heaping teaspoons of the banana mixture that was made in the beginning of the experiment was then added to the shampoo, salt, and water solution and mixed with a spoon for five to ten minutes. While the banana solution was being mixed, a number two cone coffee filter was laced inside a second five-ounce cup. The coffee filter was specifically placed in the cup so that it did not touch the bottom. After stirring for five to ten minutes, the mixture of banana and shampoo was filtered by pouring it into the coffee filter and letting the solution drain for several minutes until there was approximately five milliliters of filtrate to test. A test tube of cold alcohol was then obtained. Then a plastic pipette was filled with the filtrate two times and added to the alcohol. The solution then sat for two to three minutes without a single disruption such as shaking the test tube.

The white DNA could be seen precipitating out of the alcohol layer. Lastly, when good results were obtained, there was enough DNA to spool onto a rod or a plastic loop. Throughout the entire experiment there were many possible ways that the ending result of the appearance of the DNA could have differed. The order in which the procedure is stated is very important because the cells must first be broken down in order to release the DNA to be seen. If the steps were altered then the yield or the amount of DNA per banana could have been very small because the DNA would get trapped inside the cells or bound to lipids.

Although nowadays very few errors are made due to scientists using biotechnology equipment that allows them to look at DNA to see exactly how organisms are different, and find out how they work. Each living organism has its own unique DNA sequence. Three examples of why scientists might need to indentify DNA are for genetic testing, body identification, and analysis of forensic evidence. Genetic testing can best be defined as a process in which an individual's DNA is isolated and tested for the presence of specific genes or defects that could indicate the future onset of some disease.

Body identification is a subfield of forensicsciencewherein investigators need to identify a body. Furthermore, analysis of forensic evidence is defined as the application of forensicscience and technologyto identify specific objects from the trace evidence they leave, often at a crime scene or the scene of an accident. Overall, the Lab: Extracting DNA from Bananas demonstrated and visualized the process of how DNA can be seen from the naked eye by removing DNA directly from bananas.