CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J0406

Project Title
DNA the Onion Way

Abstract

Objectives/Goals
The goals of this experiment are to compare the weights and lengths of different onion species DNA. The objective is that through this experiment it will be proven that species can be specified by their DNA strand itself. It was hypothesized that in wieght, the white onion DNA would be heaviest, followed by red, brown, and green onion DNA. The green onion DNA would be longest, followed by brown, white, and red onion DNA.

Methods/Materials
This experiment required the method of extracting DNA. This began with the blending of the onion along with sodium cholide and warm water to speed up the breaking down of cell walls. Liquid soap is then stirred in to break the cell membranes because it's a lipid or type of fat. Filtration leaves the larger particles behind. Then, Mono sodium glutemate, meat tenderizer is added. It is an enzyme which breaks down proteins like the nuclei. Finally Isopropyl Alcohol is poured in allowing the DNA to rise from the Onion layer to the alcohol above.

Results
The experiment resulted in the red onion DNA weighing the most, followed by white, brown, and green onion DNA being lightest. The red onion DNA was also the longest, followed by brown, white, and green onion DNA being shortest. This indicates that the objective was correct.

Conclusions/Discussion
The results did not support the hypothesis. The white onion DNA, hypothesized to weigh the most, weighed an average of 1.96 grams while the red onion DNA weighed 2 grams. The green onion DNA, hypothesized to be longest, was only 10.72 mm, while the red onion DNA was 12.04 mm. These results can help inform that the DNA strand does physically change from secies to species.

Summary Statement
This experiment demonstrates the differences between different onion species DNA by length and weight.

Help Received
I recieved help through the borrowing of equipment.