Extracting DNA from bananas

Melissa Wilson Sayres

Abstract

For more information and for the Spanish version of this protocol, please see here.

The protocol is based on: http://www.scientificamerican.com/article/find-the-dna-in-a-banana-bring-science-home/.

Citation: Melissa Wilson Sayres Extracting DNA from bananas. **protocols.io** dx.doi.org/10.17504/protocols.io.esvbee6
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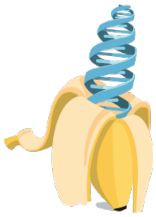
Guidelines

Introduction

All living things, bananas and people included, pass on information from one generation to the next using the same basic material, DNA. Within an organism, each cell contains a complete set of DNA "blueprints". DNA contains information for how to build each cell type and for many of the features that make that organism unique. These instructions are in segments of DNA called genes. Genes and the parts of our DNA that turn genes on and off hold information for how our body develops and functions. Variants of genes, called alleles, are responsible for differences in hair color, eye color, and earlobe shape.



We will use common household products to break apart the cells in a banana and extract out the DNA so we can see it!

Materials

- ½ peeled ripe banana
- ½ cup hot water
- 1 tsp salt
- Resealable zip-top bag
- ½ tsp dishwashing soap
- very cold rubbing alcohol (place in freezer ahead of time)
- coffee filter
- narrow glass
- wooden stirrer

Protocol

Step 1.
Mush the banana in the resealable bag for about a minute until it has a pudding-like consistency and all lumps are gone.

DURATION
00:01:00

Step 2.
Fill a cup with the hot water and salt.

Step 3.
Pour the saltwater mix into the bag, and close the bag. Gently mix and slosh the saltwater and mashed banana together for 30 to 45 seconds.

DURATION
00:00:30

Step 4.
Add dishwashing soap into the bag and gently mix the contents. You do not want the mixture to become too foamy.

Step 5.
Place the coffee filter in a clear glass cup, securing the top of the filter around the lip of the cup.

Step 6.
Pour the contents of the bag into the filter and let it sit until all of the liquid has dripped down into the cup.

NOTES
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It is especially important to be patient here. If you try to rush this step you could break the coffee filter and mix up the banana mash with the liquid with the DNA strands in it.

Step 7.
Remove and discard the used coffee filter.

Step 8.
Tilt the glass and **slowly** add cold alcohol down the side of the cup until there is a layer that is 2.5-5cm (1-2in) thick. Keep the alcohol and liquefied banana as separate as possible.

NOTES
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We cannot emphasize enough that this step should be done slowly. You want the cold alcohol to sit on top of the layer of liquid with the DNA in it.

Step 9.
Let this two-layered mixture sit for eight minutes. The longer you wait, the more defined this layer becomes. This is the DNA pieces clumping together.

DURATION
00:08:00

Step 10.
Stick the wooden stirrer into the cup. Spin it in place so that cloudy layer spools around it. Remove the stirrer. The substance that you see on the stirrer is DNA!