

A Recipe for Extracting Raw DNA, from Sarah Hansen/ Popular Mechanics

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DNA, whose structure was discovered 60 years ago by Watson and Crick, carries a human's genetic code. But few of us actually get to see it. With this simple experiment, become a DIY geneticist and pull DNA from a strawberry.

Even if students know the story of Drs. James Watson and Francis Crick—who in 1953 co-discovered deoxyribonucleic acid (DNA) molecules and later received the Nobel Prize for their work—the building blocks of all living organisms remain mysterious. Packed into the nuclei of cells in strands called chromosomes, pure DNA is seen and handled by few except scientists.

Here's a chance. This classic experiment draws the substance from strawberries, whose cells carry eight copies of each chromosome, four times the number found in human cells.

First, students will physically crack open the fruit's cell walls and then use chemical processes to let the DNA escape. Because any cell's membrane is fatty, it dissolves in liquid soap and frees the DNA. Adding salt to the medium makes the chromosomes precipitate, or solidify, and appear when the mixture touches rubbing alcohol. (DNA is much more soluble in water than in alcohol.) So where the two liquids meet, the DNA forms a white layer. A spectrometer can confirm the presence of DNA or compare it with DNA extracted from other sources, which should all look the same.

Instructions



1. Seal some ripe strawberries in a Ziploc bag, and gently squish them into mush.



2. Mix some liquid soap with a small scoop of table salt. Add the solution to the bag. Reseal, and gently squish again to dissolve the cell membranes.



3. Place a coffee filter over a glass cup. Pour the mixture through the filter to remove any solids. Now you have a DNA-rich cup of strawberry soap.



4. Tip the cup to one side and gently pour rubbing alcohol down that side of the cup. The alcohol should form a layer on top of the strawberry soap.



5. A white, stringy layer of DNA molecules will form between the alcohol and the strawberry soap. Use a chopstick to grab the DNA and slowly pull it out. It should emerge in long, gooey strands of intertwined macromolecules. These can be preserved in rubbing alcohol.