

Project FOCUS  
Best Lessons  
FIFTH GRADE

**Title of Lesson: Extracting Your Own DNA**

**Theme:** Life Science

**Unit Number:** [Click here to enter text.](#) **Unit Title:** [Choose an item.](#)

**Performance Standard(s) Covered (enter code):**

Inheritance – DNA (covered during Social Studies Unit)

[Click here to enter text.](#)

**Enduring Standards (objectives of activity):**

**Habits of Mind**

- Asks questions*
- Uses numbers to quantify**
- Works in a group**
- Uses tools to measure and view*
- Looks at how parts of things are needed**
- Describes and compares using physical attributes*
- Observes using senses*
- Draws and describes observations**

**Content (key terms and topics covered):**

Students will understand the DNA's role in cells and extract their own clumps of DNA from cheek cells.

**Learning Activity (description in steps)**

**Abstract (limit 100 characters):** Fun activity to physically see their own DNA strands after learning about its role in the cell.

**Details:** I did this activity after the class wrapped up their unit on cells and cell structures in animal and plant cells. They switched to social studies, and I could teach any science-related topic that I wished. I decided to expand on cells, particularly genetics. We discussed the structure of DNA many classes before and its role in determining what traits are expressed in individuals. The steps for extracting DNA from cheek cells are as follows (see YouTube video for visual representation):

Step 1: Mix 500 ml drinking water with 1 tbsp salt (Prepare prior to activity)

Step 2: Stir until salt is dissolved. Then transfer 3 tbsp of salt water into a clear cup.

Step 3: Gargle the salt water for 1 minute.

Step 4: Spit the water back into the cup. Now your cheek cells are suspended in the salt water.

Step 5: Gently stir the salt water with one drop of soap. (Avoid bubbles as much as possible).

Note: Soap breaks down the cell membranes, releasing the DNA.

Step 6: In a separate cup, mix 100 ml isopropyl alcohol and 3 drops of food coloring. (I walked around the class and poured this into their cups)

Step 7: Tilt the salt water cup and gently pour the alcohol so that it forms a layer on top (about 2 cm thick).

Step 8: Wait about 2.5 minutes. You should see white clumps and strings forming.

The majority of people saw their DNA!

Questions to ask after the activity:

1. What is DNA made of?
2. What bases are paired together in a DNA molecule?
3. What is the role of DNA in cells?
4. Explain how an individual is a homozygote or heterozygote in terms of dominant and recessive alleles.

**Materials Needed (type and quantity):** clear plastic cups, rubbing alcohol, dish soap, salt, water, coffee stirrers, blue food coloring

**Notes and Tips (general changes, alternative methods, cautions):** I did this with the entire class at one time, and it became a little chaotic. Although, I had the instructions on the SmartBoard, some students did not follow instructions or blew bubbles in the cup with their straws. This caused problems because these students did not see their DNA. I suggest doing this activity in small groups and using glass stirring rods if possible.

**Safety Concerns:** Make sure no one swallows the salt water mixture in the first step or drinks the mixture after all ingredients have been combined.

**Sources/References:**

1) <http://www.pbs.org/wgbh/nova/body/extract-your-dna.html>

2) Click here to enter text.

3) Click here to enter text.