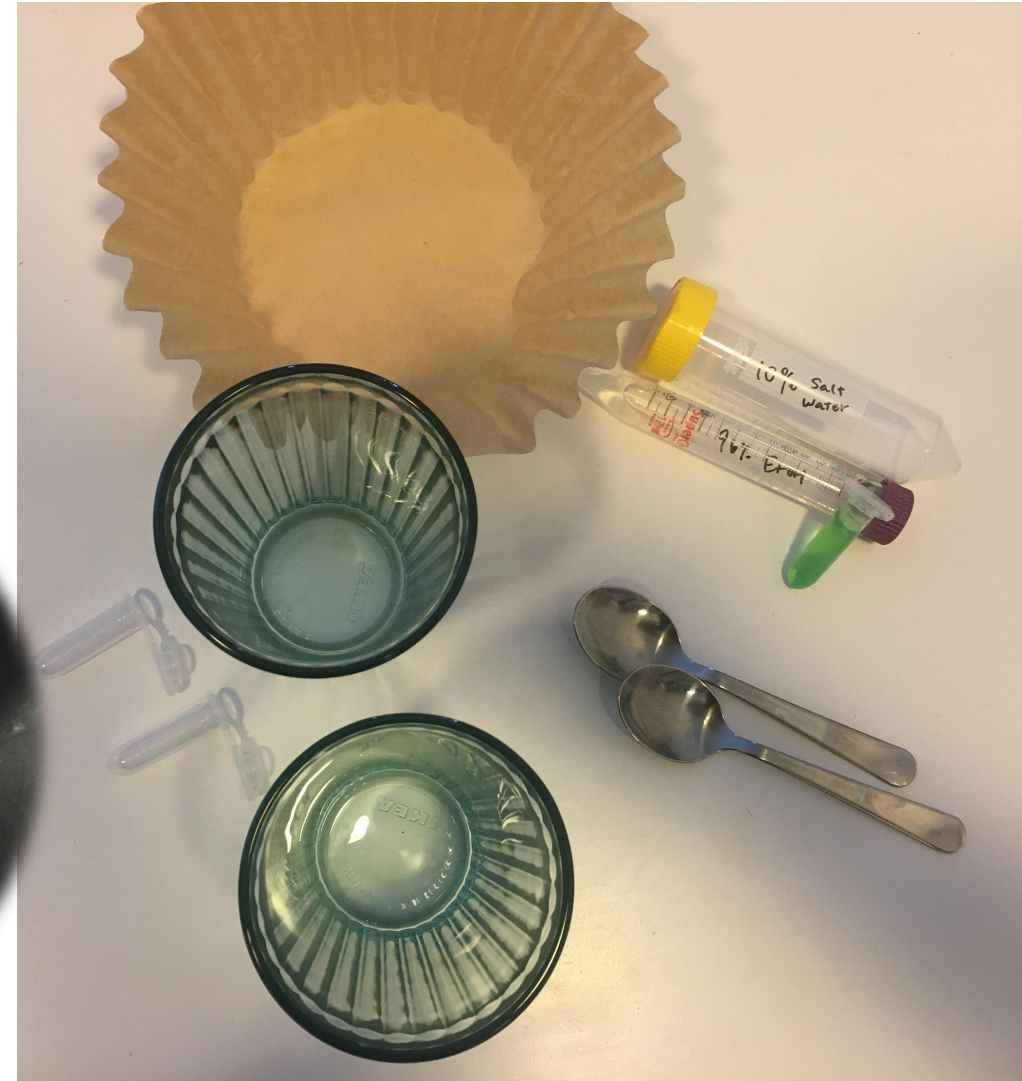




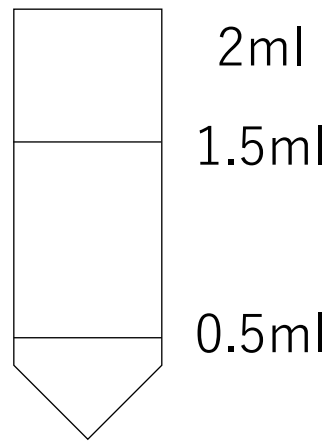
Extract DNA from fruits  
or vegetables!

# Ingredients (for one group)

- Fruits or vegetables which you want to try!
- 10% salt water (25 ml)
- Detergent (one tea spoon)
- Ethanol (ex. disinfection alcohol)
- Two cups
- Coffee filter (half)
- Two pipettes
- Two spoons
- Two Eppendorf tubes



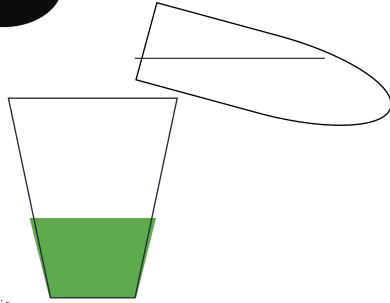
# How to do?



1 Put Fruits or vegetable and smash them ! (3~5 min)

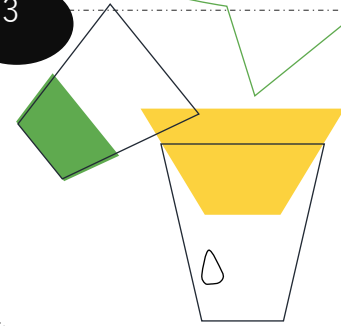


2 Add 25mL of salt water and mix well (10 sec)

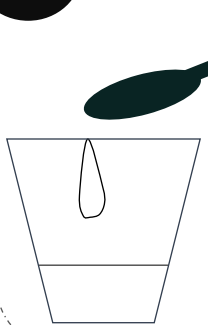


Don't push!  
Let it drop naturally 😊

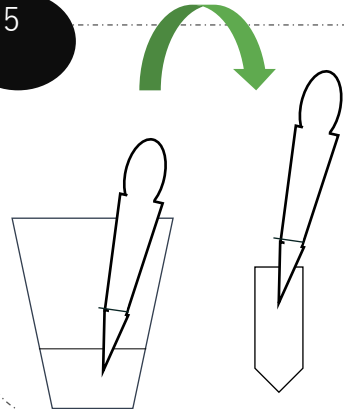
3 Put on filter (5 min)



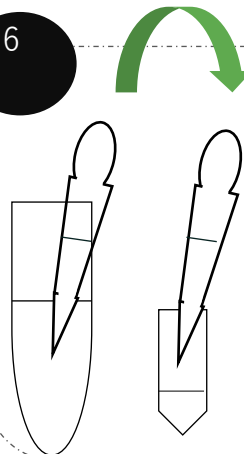
4 Add Detergent and mix gently (10sec)



5 Transfer 0.5 ml of 4's liquid to tube.



6 Add 1 ml of alcohol gently





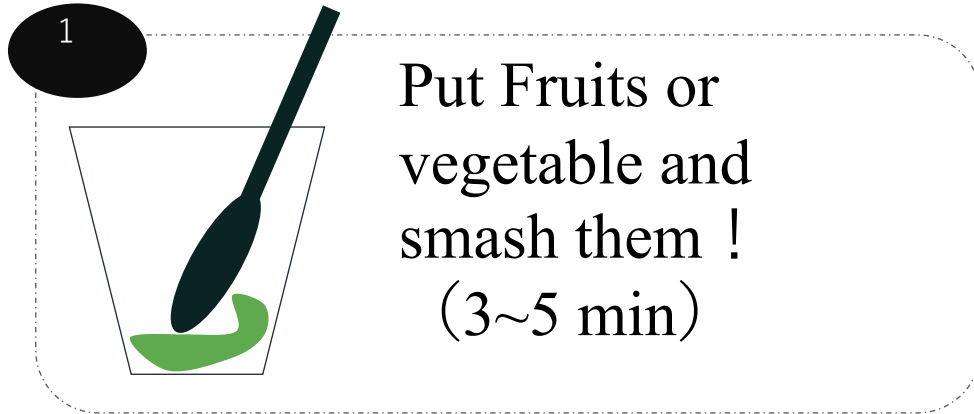


**But what did we do in each step?**

**Explanation for each step**

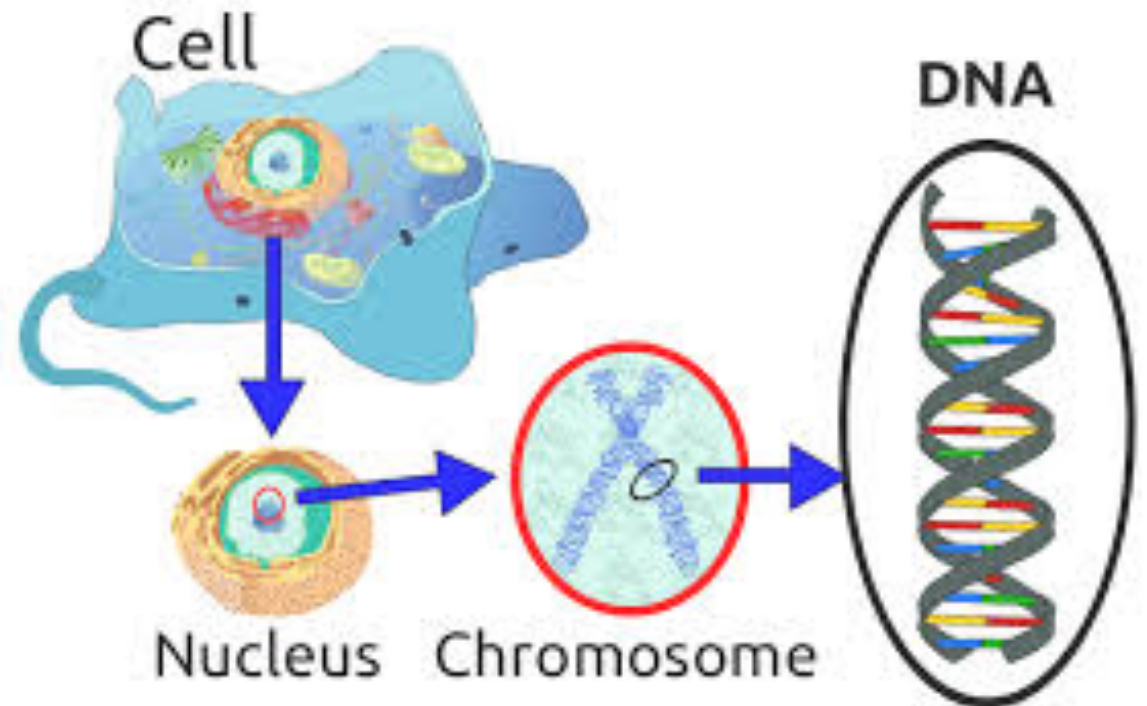


# 1st Step: Why did we smash the sample?



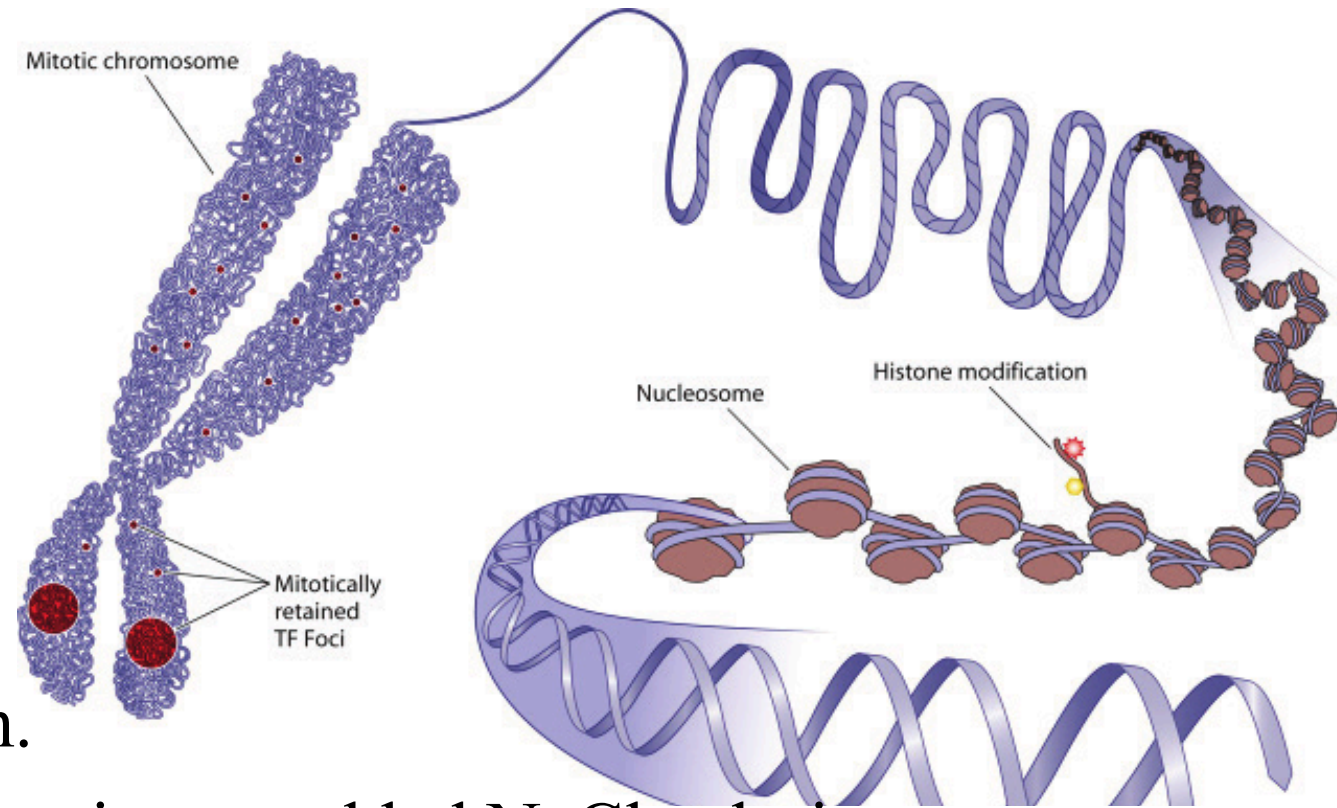
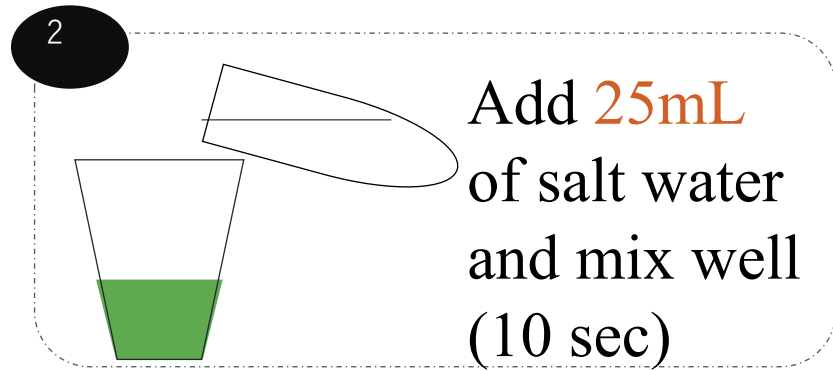
Q1. Where is DNA?

→ DNA is in the cell, nucleus



We smashed samples to break cell physically to extract DNA!

# 2nd Step: Why did we add salt water? Why was it 10%?



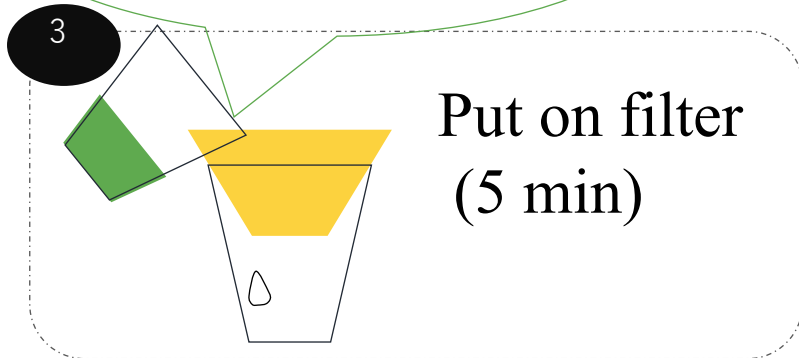
The DNA binds with histone protein.

To make DNA separate from that protein, we added NaCl solution.

By that, DNA can dissolve into NaCl solution, and 10% is the best concentration for dissolving DNA!

# 3rd Step: Why did we filter them?

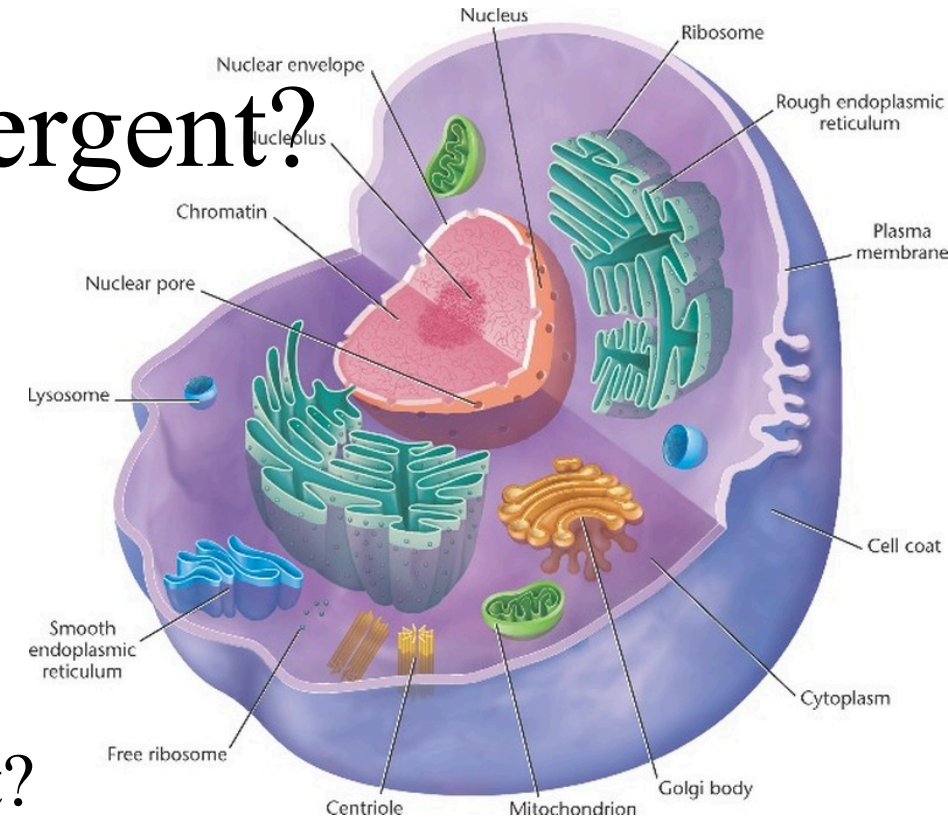
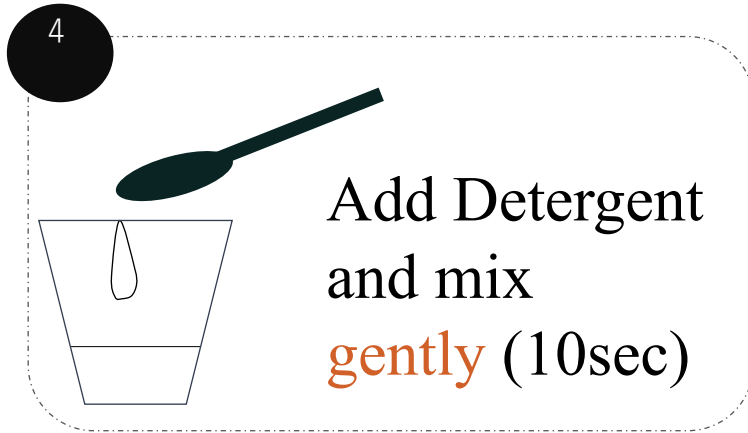
Don't push!  
Let it drop naturally 😊



As I said before, DNA is dissolved into NaCl solution so by filtering them, we can get the dissolved DNA!



# 4th Step: Why did we add detergent?



DNA is in the nucleus which is in the cell, right?

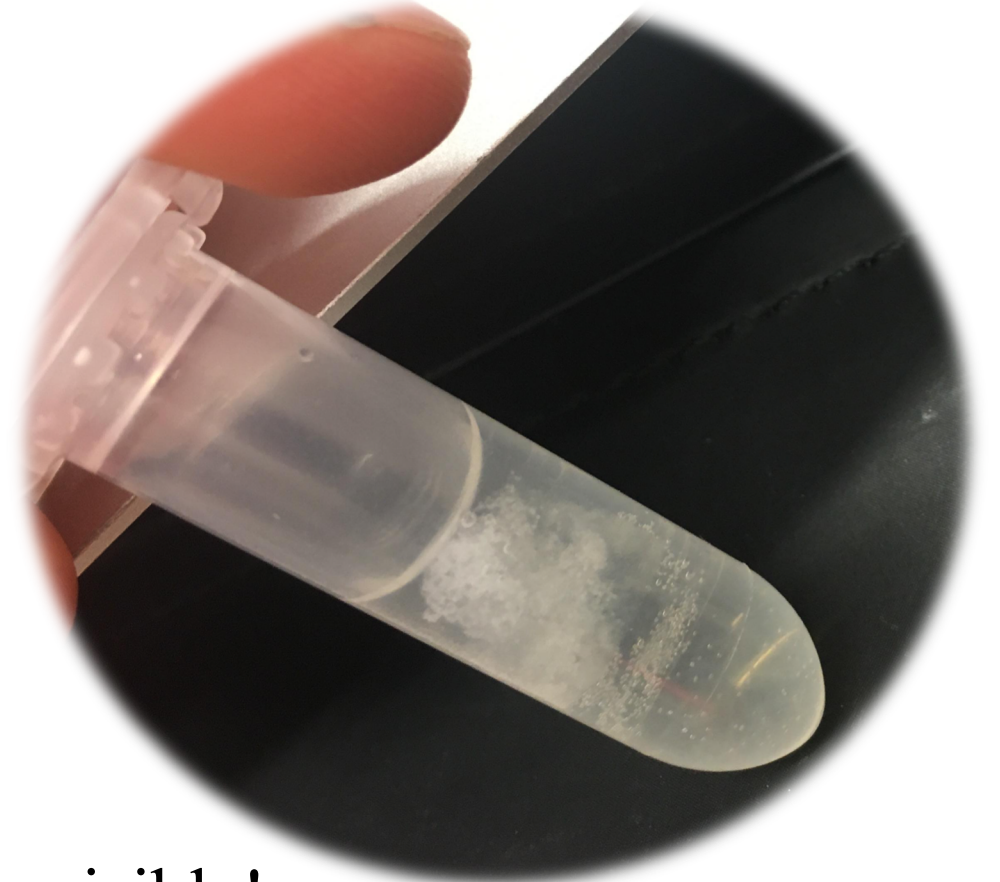
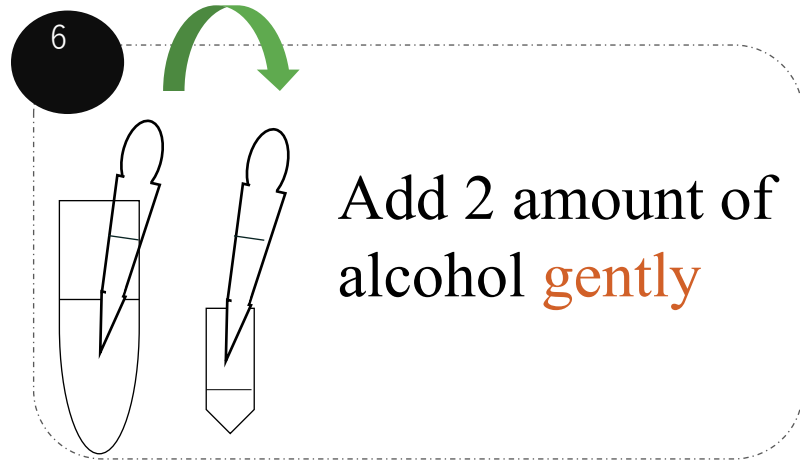
There are many things around DNA such as cell membrane or nuclear membrane.

These membrane are made by phospholipid.

This phospholipid will be broken by detergent!

So, we did that to break the membrane around DNA!

# 6th Step: Why did we add ethanol?



DNA is insoluble in alcohol.  
Therefore, by adding ethanol, DNA became visible!

# Discuss about the result!

- Banana
- Grape
- Plom
- Kiwi
- Tomato



What makes this difference you think?

