

**Introduction:**

All living things are made up of cells. Each cell has a nucleus which controls the phases of the life cycle. Cells reproduce in part by making and passing deoxyribonucleic acid (DNA) from the parent cell to the offspring cell. DNA dissolves in salt water and precipitates in alcohol.

**Purpose:**

To extract DNA from banana cells by using items easily available in the kitchen.

**Materials:**

1 x Banana	Mortar and pestle	Coffee filter
Liquid detergent	Glass rod	Salt
Cooled ethanol	Beaker	Tap water

**Procedure:**

1. ***Preparation of Solution:***

In a beaker mix 8g of salt with 3mL of liquid detergent. Fill beaker with water to a volume of 50mL and stir gently with glass rod.

2. ***Sample Preparation:***

Mash-up 5cm piece of banana and place in beaker.

3. ***Extraction of DNA:***

Gently stir mashed banana suspension then let stand for 10mins. (The liquid detergent is a surface acting agent [or surfactant] and helps DNA dissolve in salt water.)

4. ***Filtration:***

Use a coffee filter to filter mashed banana suspension into a new beaker.

5. ***Precipitation of DNA:***

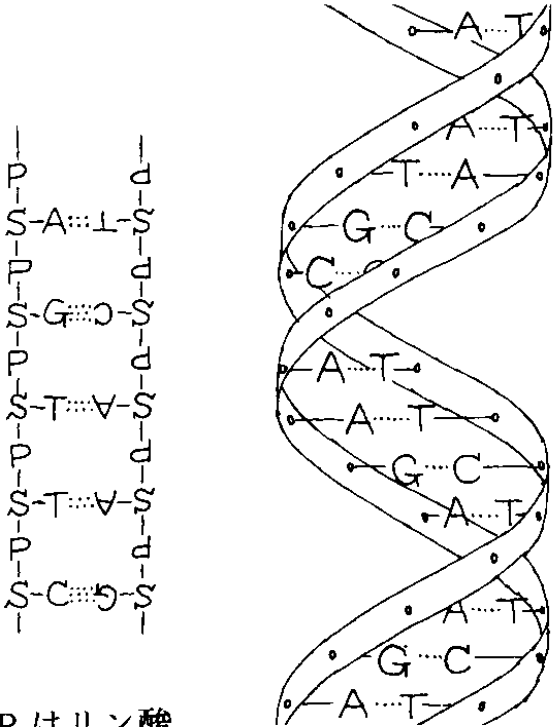
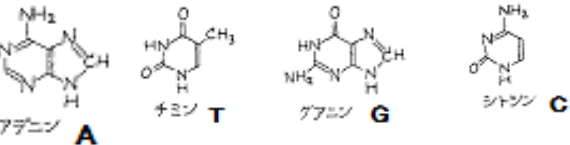
Pour the same filtrate volume of ethanol into another beaker. Add ethanol to filtrate by slowly pouring it down a glass rod. (Ethanol, with its lighter specific gravity, sits on the filtered solution making two different liquid layers.) Wait for a white precipitate to form on the boundary phase. (DNA does not dissolve in ethanol. It will precipitate out.)

6. ***Collection of DNA:***

Gently stir the solution with glass rod. The DNA fibres will cling to it and the DNA can be spooled and collected.

**DNA Structure**

1. DNA is a \_\_\_\_\_ structure.
2. The DNA \_\_\_\_\_ consists of an alternating deoxyribose (sugar)- \_\_\_\_\_ sequence.
3. The two strands of the double helix run anti- \_\_\_\_\_ to each other.  
This means they run in \_\_\_\_\_ direction.



P はリン酸  
S はデオキシリボース

4. Adenine and guanine are \_\_\_\_\_ nucleobases.
5. Cytosine and thymine are \_\_\_\_\_ nucleobases.
6. The nucleobases form \_\_\_\_\_ - \_\_\_\_\_ base pairs and \_\_\_\_\_ - \_\_\_\_\_ base pairs.

adenine	purine
the same	double-helix
parallel	thymine
pyrimidine	backbone
cytosine	opposite
phosphate	guanine