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(1632–1723)

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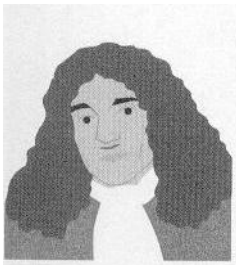

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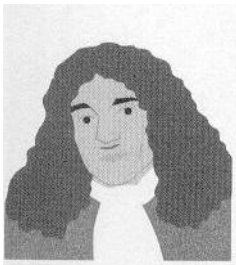

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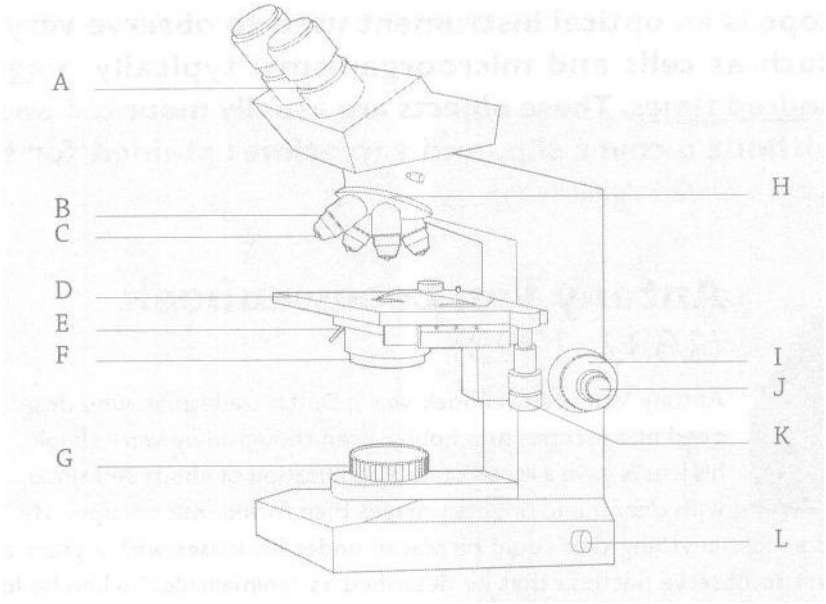
Activity n°1: Let's discover the microscope!

You will be provided a list of words.
Match these words with the appropriate caption in the diagram below.



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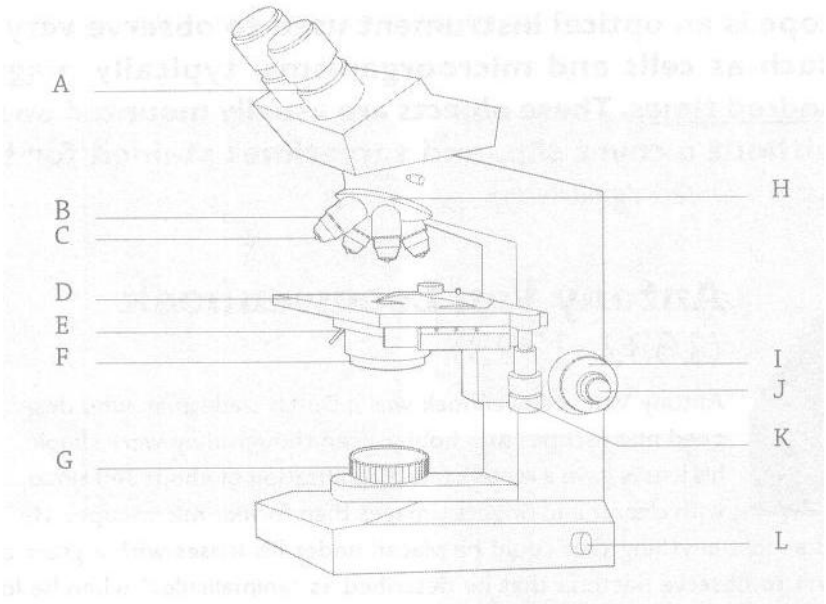

Activity n°2: Let's focus on the different parts of the microscope!

Match the main parts of a microscope in the left-hand column with the correct statement in the right-hand column.

Stage	Brings object into rough focus
Fine focus = fine adjustment knob	Magnifies the object 10 times
Objective lens	Where slide is placed
Eyepiece lens	Brings object into sharp focus
Coarse focus = coarse adjustment knob	Found just above the stage
Condenser	Varies the effective aperture of the lens
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Activity n°3: Let’s recap the steps of the Gram staining!

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2. What is the difference between Gram negative and Gram positive bacteria?

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Activity n°4: Let's figure out what will happen if…..

Instructions:

1. Student A is an experienced lab technician.
2. Student B is a trainee.

-The trainee is required to perform a Gram staining, but he's not entirely sure of the procedure, and asks for more explanations to the lab technician.
-Prepare a dialogue, in which you will use two "if"-clauses.
-Let's act!

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Activity n°5: Let's make a wet mount!

Listen to the video: https://youtu.be/N1780tJTk90

Make a list of the equipment you need to make a wet mount preparation.
Explain the different steps of the technique, from the collection of the sample to the observation under the microscope.

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Activity n°6: Let's compare the two techniques!

In a table, compare the advantages and disadvantages of both techniques with as many information as you can.

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Activity n°7: Let's see other techniques!

Could you guess what those other techniques are used for? Match the techniques in the left-hand column with the correct statement in the right-hand column.

Streak plate/streaking method	Growing bacteria within a solid growth medium, in order to count the colonies
Enzyme tests (catalase or oxidase)	Making a confluent growth of bacteria spread evenly over the surface of a growth medium
Dry mount/smear	Isolating bacteria in order to grow them into isolated colonies, easy to observe and describe
Spread plate/lawn plate	Diluting bacterial suspension, in order to lower their concentration for easier counting
Pour plate	Looking for the presence or absence of such enzymes, in order to identify the bacteria
Serial dilutions	Mounting and heat-fixing bacteria on a slide, for further use (stained smear for example)

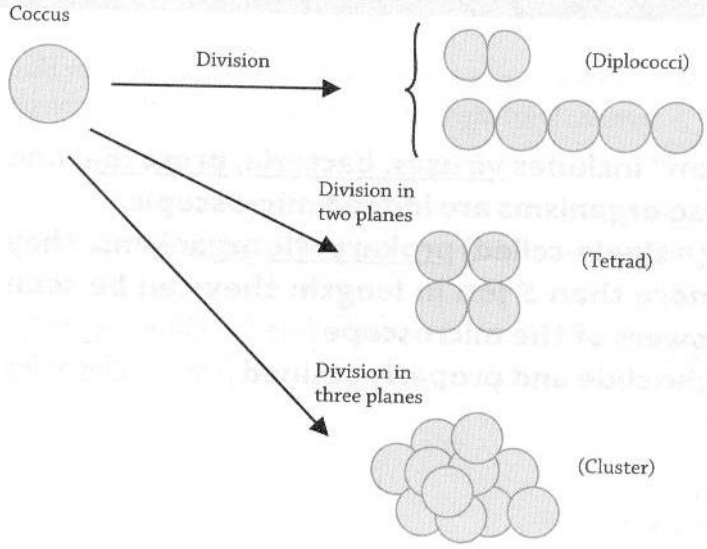
A. Bacterial morphologies

Bacteria can have different shapes, mostly spherical (**cocci**) or rod-shaped (**bacilli**).

	Example
Straight rod	***Escherichia***
Comma forms	***Vibrio***
Spore forming rod	***Bacillus***
Coccus	***Staphylococcus***

B. Bacterial arrangements

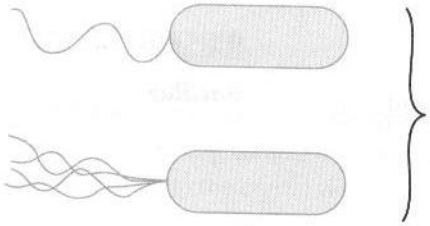
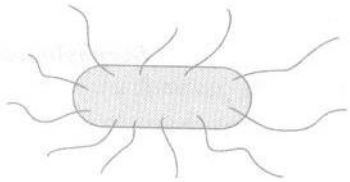
Bacteria exhibit different arrangements, which can be observed on a wet mount *[see 6 – Observin bacteria]*.



Example
Neissera
Streptococcus
Micrococcus
Staphylococcus

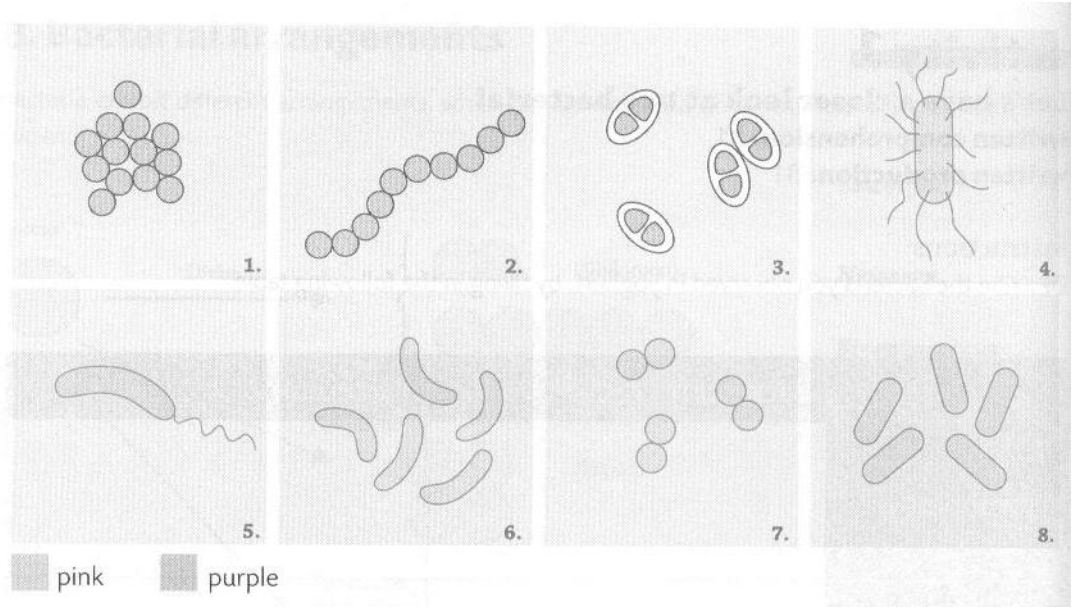
C. Bacterial flagella type

Some bacteria have filaments, called **flagella**, sticking out of them. The flagella can flick, and so make the bacterium move. They can be inserted on different locations on the bacterial cell: this is called the **flagella type**. The **wet mount technique** is a method to determine the flagella type by observing the motility of the bacterium *[see 6 – Observing bacteria]*.

Structure	Flagella type	Example
	Polar	***Vibrio cholerae***
		Bartonella bacilliformis
	Peritrichous	***Escherichia coli***

Activity n°8: Let's have a closer look at other bacteria!

Describe the following bacteria as precisely as possible.



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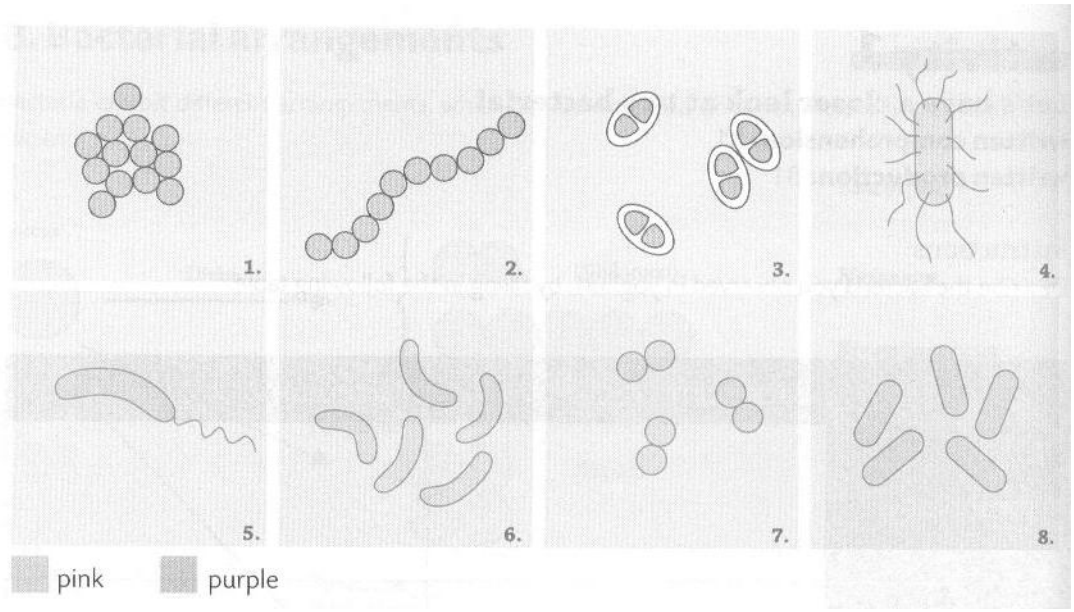
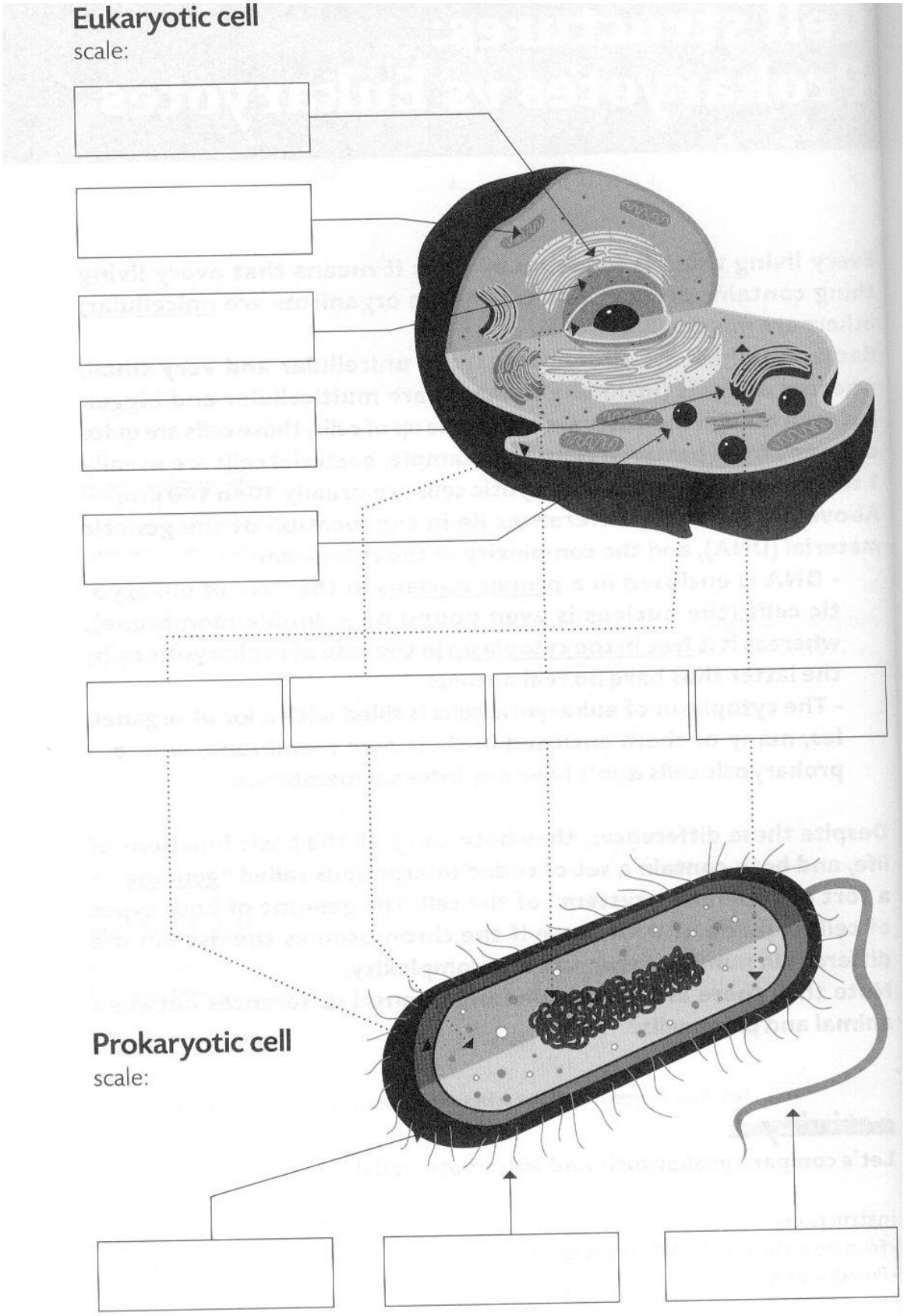


Activity n°9: Let's compare prokaryotic and eukaryotic cells!

Watch the video : https://youtu.be/Pxujitlv8wc, and fill in the captions on the following diagrams. Provide a scale.



Activity n°10: Let's compare animal and plant cells!

Watch the video https://youtu.be/7pd5okYkuYE, and state which of the cells shown here is an animal and which is a plant cell. Justify your answer.
Complete the captions.