Bangkok Christian College

Name_____ **Class No.**_____ **No.**_____

Microscopy Practical

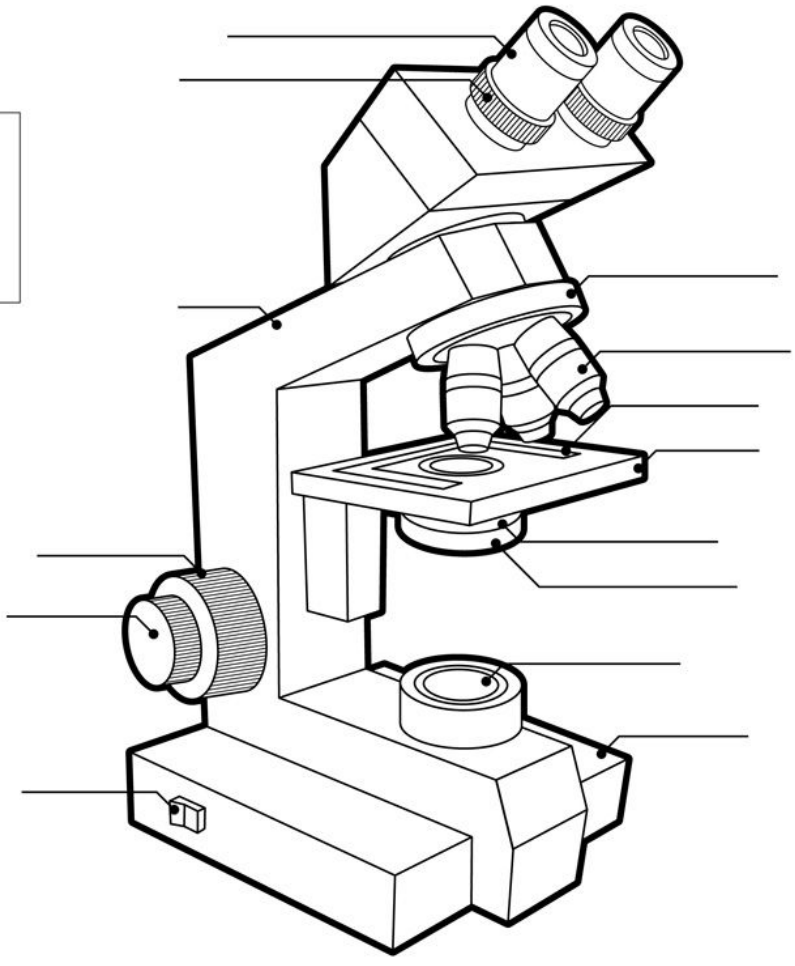
After each microscope, **except for #1**, put the stage down, put condenser down, adjust objective lens to **4x**, remove the slide and place it on the corner of the stage.

1. Microscope #1. Label the Microscope and observe Penicillium.

Step 1: Label the microscope and define each term in the word box below.

Directions: Choose the correct microscope part from the word box and write it in the appropriate blank on the microscope diagram.

Arm	Ocular Lens	Coarse Focus
Fine Focus	Condenser	Light Source
Objective Lens	Diopter Adjustment	Stage
On/Off Switch	Base	Iris Diaphragm
Slide Holder	Nose Piece	

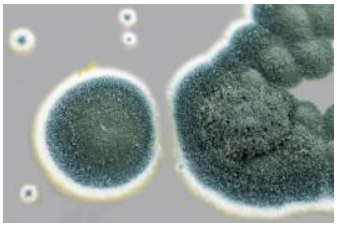


Directions: Define each of the terms in the word box using the space below.

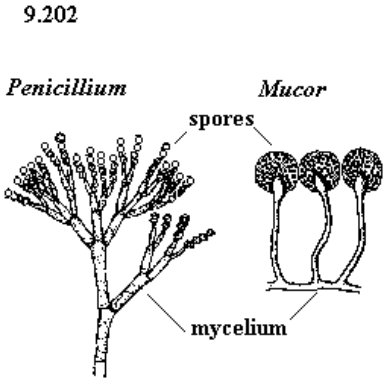
Step 2: Check if the slide on the stage and locked with the slide holder.

Step 3: Check if the objective lens is set on 4X.

Step 4: Look through the ocular lens and take a picture through one of the ocular lenses. Put the picture in the box below. Also circle the part where you can find mycelium and spores in your picture (see picture provided below).



Penicillium *is a genus of ascomycetous fungi that is of major importance in the natural environment, in food spoilage, and in food and drug production. Some members of the genus produce penicillin, a molecule that is used as an antibiotic, which kills or stops the growth of certain kinds of bacteria.*



Step 5: Clean Ocular lens with tissue to remove any stains, oil and dust.

2. Microscope #2 (Newly hatched larva of Silkworm)

*The **larva** is the caterpillar (not really a "worm" at all). The **pupa** is what the **silkworm** changes into after spinning its cocoon before emerging as a moth. Since the **silkworm** grows so much, it must shed its skin four times while it is growing. These stages-within a-stage are called instars.*

Steps for Microscope:

Step 1: Adjust ocular lens so you can see one clear 'circle'.
Step 2: Place the slide on the stage and lock it in the slide holder.
Step 3: Check if the objective lens is set on 4X.
Step 4: Move up the condenser.
Step 5: Adjust the stage so the specimen is right below the light.
Step 6: Look through the ocular lens and slowly move up the coarse adjustment to find a better resolution (better image).
Step 7: Slowly move up the fine adjustment to find the best resolution.
Step 8: Take a picture of the whole organism through one of the ocular lenses and write down the total magnification.

Total Magnification:

_____

Step 9: Turn Objective lens to 10X, and repeat step 6 and 7.
Step 10: Take a picture of the head through one of the ocular lenses and write down the total magnification.

Total Magnification:

_____

Step 11: Remove the slide, move back objective lens 4X, move down condenser and move down stage.
Step 12: Clean Ocular lens and slide with white tissue to remove any stains, oil and dust.

3. Microscope #3 (Hydra)

Hydra *is a genus of small, fresh-water organisms of the phylum Cnidaria and class Hydrozoa. They are native to the temperate and tropical regions. Biologists are especially interested in Hydra because of their regenerative ability – they do not appear to die of old age, or indeed to age at all.*

Steps for Microscope:

Step 1: Adjust ocular lens so you can see one clear 'circle'.
Step 2: Place the slide on the stage and lock it in the slide holder.
Step 3: Check if the objective lens is set on 4X.
Step 4: Move up the condenser.
Step 5: Adjust the stage so the specimen is right below the light.
Step 6: Look through the ocular lens and slowly move up the coarse adjustment to find a better resolution (better image).
Step 7: Slowly move up the fine adjustment to find the best resolution.
Step 8: Change the objective lens to check the different magnifications and select the best magnification to take a picture of the whole Hydra.
Step 9: Take a picture through one of the ocular lenses. And label the Hydra's mouth, tentacle, gastrovascular cavity, bud and basal disk.

Objective Lens chosen:

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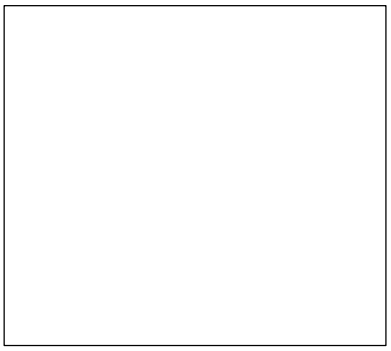

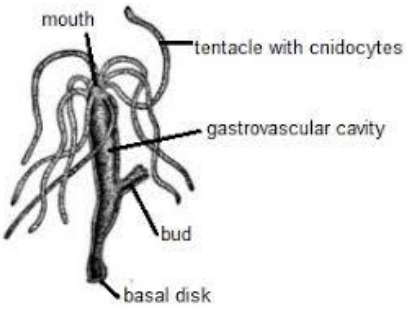

Step 10: Remove the slide, move back objective lens 4X, move down condenser and move down stage.
Step 11: Clean Ocular lens and slide with white tissue to remove any stains, oil and dust.

4. Microscope #4 (Onion tissue)

*The **onion**, also known as the bulb onion or common onion, is a vegetable that is the most widely cultivated species of the genus Allium. Its close relatives include the garlic, scallion, shallot, leek, chive, and Chinese onion.*

Steps for Microscope:

Step 1: Adjust ocular lens so you can see one clear 'circle'.
Step 2: Place the slide on the stage and lock it in the slide holder.
Step 3: Check if the objective lens is set on 4X.
Step 4: Move up the condenser.
Step 5: Adjust the stage so the specimen is right below the light.
Step 6: Look through the ocular lens and slowly move up the coarse adjustment to find a better resolution (better image).
Step 7: Slowly move up the fine adjustment to find the best resolution.
Step 8: Take a picture through one of the ocular lenses. Label a cell wall and nucleus in picture.

Total Magnification:

_____

Step 9: Turn Objective lens to 10X, and repeat step 6, 7 and 8.

Total Magnification:

_____

Step 10: Turn Objective lens to 40X, and repeat step 6, 7 and 8.

Total Magnification:

_____

Step 11: Remove the slide, move back objective lens 4X, move down condenser and move down stage.
Step 12: Clean Ocular lens and slide with white tissue to remove any stains, oil and dust.

5. Microscope #5 (Vicia Faba, epidermis of stomata)

***Vicia faba**, also known in the culinary sense as the broad bean, **fava** bean, or **faba** bean, is a species of flowering plant in the pea and bean family Fabaceae. It is of uncertain origin and widely cultivated as a crop for human consumption. It is also used as a cover crop.*

Steps for Microscope:

Step 1: Adjust ocular lens so you can see one clear 'circle'.
Step 2: Place the slide on the stage and lock it in the slide holder.
Step 3: Check if the objective lens is set on 4X.
Step 4: Move up the condenser.
Step 5: Adjust the stage so the specimen is right below the light.
Step 6: Look through the ocular lens and slowly move up the coarse adjustment to find a better resolution (better image).
Step 7: Slowly move up the fine adjustment to find the best resolution.
Step 8: Take a picture through one of the ocular lenses.

Total Magnification:

_____

Step 9: Turn Objective lens to 10X, and repeat step 6, 7 and 8.

Total Magnification:

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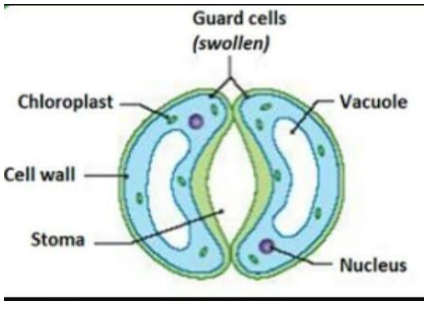
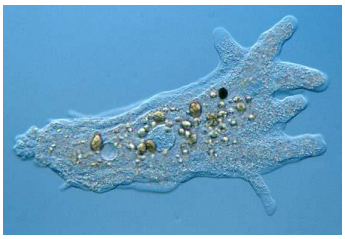
Step 10: Turn Objective lens to 40X, and repeat step 6, 7 and 8. Take a clear picture of a guard cell and epidermal cell. Label the Guard cell; stoma, nucleus and cell wall. And epidermal cell; nucleus and cell wall.



Step 11: Remove the slide, move back objective lens 4X, move down condenser and move down stage.
Step 12: Clean Ocular lens and slide with white tissue to remove any stains, oil and dust.

6. Microscope #6 (Amoeba)



*An **amoeba** or ameba, often called an amoeboid, is a type of cell or unicellular organism which has the ability to alter its shape, primarily by extending and retracting pseudopods. Amoebae do not form a single taxonomic group; instead, they are found in every major lineage of eukaryotic organisms.*

Steps for Microscope:

Step 1: Adjust ocular lens so you can see one clear 'circle'.
Step 2: Pick one slide and place the slide on the stage and lock it in the slide holder.
Step 3: Check if the objective lens is set on 4X.
Step 4: Move up the condenser.
Step 5: Adjust the stage so the specimen is right below the light.
Step 6: Look through the ocular lens and slowly move up the coarse adjustment to find a better resolution (better image).
Step 7: Slowly move up the fine adjustment to find the best resolution.
Step 8: Change the objective lens to check the different magnifications and select the best magnification for the Amoeba specimen (Objective: 4X, 10X, 40X). Label as many parts of the Amoeba.

Objective Lens chosen:

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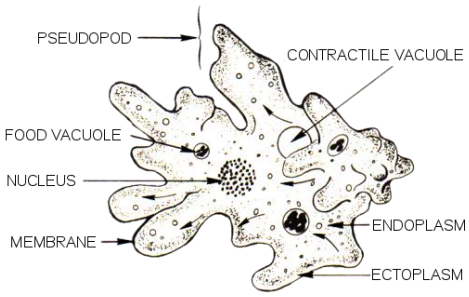

Step 9: Change the Amoeba slide and find the best magnification again. Take a picture through one of the ocular lenses. Identify which step of binary fission you see on the slide.

Step of Binary Fission:

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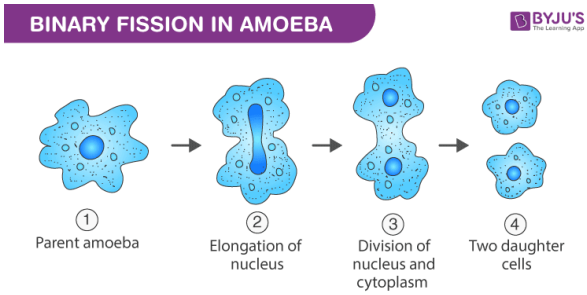

Step 10: Remove the slide, move back objective lens 4X, move down condenser and move down stage.
Step 11: Clean Ocular lens and slide with white tissue to remove any stains, oil and dust.