OLD TED COMPOUND MICROSCOPE

40x – 1000x

Microscope for
Adults & Students

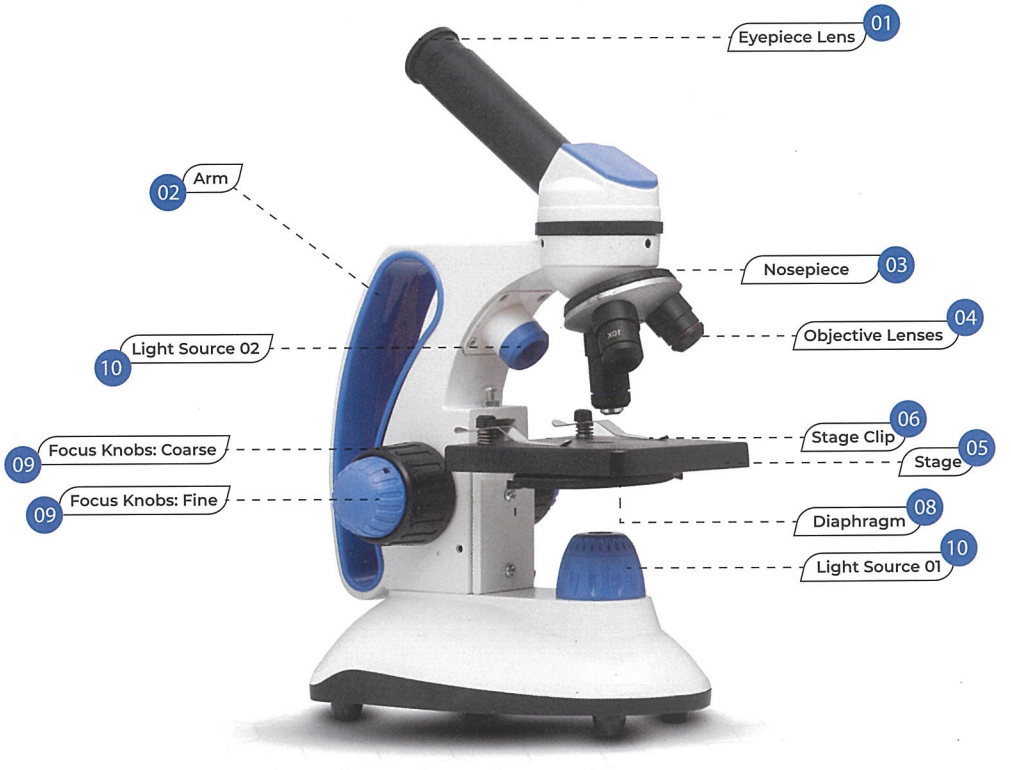
INSTRUCTION GUIDE

MICROSCOPE INSTRUCTION GUIDE

Outline

Start Today

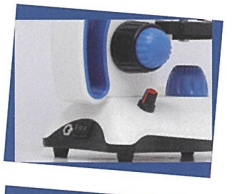
This quick-start guide will help you to familiarize yourself with the parts and functions of your new microscope to maximize your usage and enjoyment.



PARTS & DESCRIPTION

1. **Eyepiece** - Inclined at a 40-degree angle, it is the part that you look through. The eyepiece contains the eyepiece lens (magnification 10x, 25x)
2. **Arm** - It serves as the carrying handle for moving the microscope.
3. **Nosepiece** - It holds the objective lenses
4. **Objective Lens** - Lens closest to specimen with standard 4x, 10x & 40x objectives that provide multiple magnification levels from 40x-1000x.
5. **Stage** - Platform below the objective lens that supports the specimen slide. It moves up and down when you adjust the focus knob to get the right distance between the lens and slide.
6. **Stage Clips** - Clips that hold the slide specimen in place.
7. **Diaphragm** - It adjusts the lighting coming through the specimen.
8. **Focus Knobs** - It is used to elevate or lower the stage until the image becomes clearer and sharper. It has coarse and fine focus knobs.
9. a. **Light Source 1** - Under the stage and directs light into the specimen.

   b. **Light Source 2** - Above the stage, direct light from above



10. **Light Intensity Control** - Located at the base, it helps adjust light brightness.

11. **Phone Holder** - It holds your phone to observe the slide and take pictures.

12. **Power Adapter** - Plug into an outlet for power supply.

13. **Battery Compartment** - Found under the microscope base. Requires x3 AA Batteries
14. **Power On/Off button**

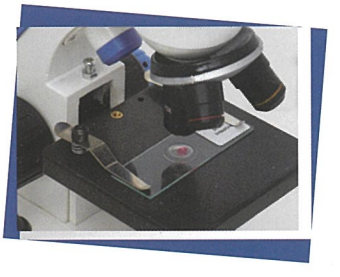
15. **Slide Kit** - Contains 10 prepared specimen slides, 5 blank slides and 20 cover slips in a durable plastic case

SETTING UP THE MICROSCOPE

1. Set your microscope on a flat surface such as a table.
2. Remove the small eyepiece cap and place the 10x eyepiece in position.
3. Plug the power adapter into an outlet or insert batteries. (Do not use both together.)
4. Turn the microscope on by pressing the power button.
5. Using the light intensity control, set the lamp on a low brightness setting.
6. Turn the coarse focus knob to lower the stage to its lowest point.
7. Rotate the nosepiece so the lowest power (4x) objective is in position.
8. Place a prepared slide under the stage clips.
9. Look through the eyepiece and slowly turn the coarse focus knob until the specimen is in focus.
10. Use fine focus knob to get the best image.
11. Adjust the light intensity control to get the appropriate light intensity.
12. Rotate the diaphragm to get the best lighting to fine-tune the image.

You have now viewed the specimen under **40x** magnification using the **4x** objective and **10x** eyepiece.

You can rotate the nosepiece clockwise to try out **10x** and **40x** objectives. (If needed, use the focus knob to move the stage down and away to make room before changing magnification.)



3 SIMPLE STEPS

1. Turn on the Microscope and use the light dimmer
2. Turn the coarse knob to lower down. The coarse knob is black and fine knob is blue
3. Place a slide on the stage

MAGNIFICATION EXPLAINED

Most microscopes have 3 objective lenses which magnify the object by different amounts. They are called low, medium and high. In this model, they are **4x, 10x and 40x.**

The microscope's magnifying power is the strength of the eye piece (**10x and 25x)** multiplied by the objective lens. Hence the range of magnification is between **40x (i.e., 4x X 10x) and 1000x (i.e., 25x X 40x).**

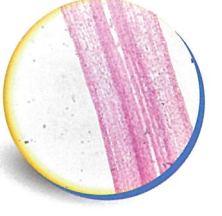
PREPARED SLIDES

SLIDE STARTER SET

A Slide Starter Set is included with your microscope to build your microscope skills. It comes with 10 prepared specimen slides listed below and 5 blank slides to make your own personal microscope slides.

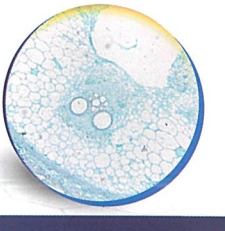
1. **Corn root tip**

- Observe the root cap followed by the zone of cell division, zone of elongation, and zone of maturation.



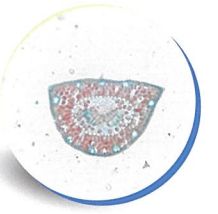
2. **Pumpkin stem**

- Notice the large vascular bundles and thick epidermis of the pumpkin stem.



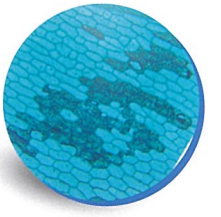
3. Pine leaf

- Observe the numerous resin ducts along the pine leaf which hold resin for the tree's defense.



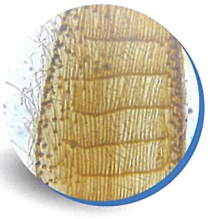
4. Onion epidermis

- Observe the cells of the onion epidermis, including the cell wall and nucleus.



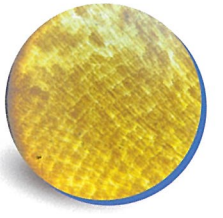
5. Bee leg

- Notice the hairs, known as the scopa, on the bee's leg as well as the different sections of the leg.



6. Butterfly wing

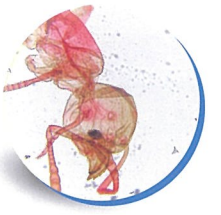
- Observe the microscopic scales of the butterfly wing which help the butterfly during flight.



7. Mosquito mouthpieces

- Observe the system of six thin needle-like mouthparts that make up the mosquito's mouth, or proboscis.

8. Ant

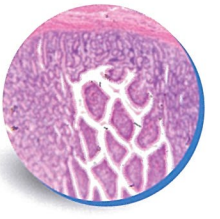


- Investigate the anatomy of the ant, including the head, antennae, eyes, mouthparts and so forth.

9. Frog blood

- Observe the frog blood cells, specifically the dark dot inside each cell which is the nucleus.
- Unlike human red blood cells, frog blood cells contain a nucleus.

10. Small intestine



- Observe the epithelial lining and villi of the small intestine.

HOW TO PREPARE YOUR OWN SLIDES

Making your own slides is easy and fun. Some materials you might like to try: hair, soil, sand, pollen, feather, sewing thread, salt, sugar, or plant material. Whatever material you choose, make sure to prepare a small amount or thin slice of it.

To mount the specimen on a slide:

1. Place a small drop of water on a blank slide.
2. Use a clean toothpick or tweezers to gather the dry specimen material.
3. Transfer material to the water drop on the blank slide.
4. Carefully lower a coverslip onto the slide.

Your slide is now ready to be examined.

Slides can be created without using water, however, keep in mind that living samples will dry out without it.

EXERCISES TO TRY

Exercise #1: Hair

For this exercise, you can collect various hair samples including hair from family members, hair from pets, hair that is different in colour, hair that has been dyed, or hair from someone young or old.

Prepare each slide with a single specimen of hair.

What do you observe at each magnification level?

What do you notice about each type of hair?

How are the hair samples different?

Draw what you see.

Exercise #2: Salt & Sugar

For this exercise, you can prepare one slide with salt and one slide with sugar. Make sure to label your slides. Use a small amount of each crystal without water. You can also try other spices.

What do you observe at each magnification level?

How do salt crystals look?

How do sugar crystals look?

How are they different or similar?

Draw what you see.

TROUBLESHOOTING

Issue	Possible Cause	Solution
Lamp does not turn on	No power source	Check the power adapter is connected or batteries installed
	Bulb is burned out	Replace the bulb
Lamp flickers	Power adapter is not fully plugged in	Check that adapter is fully connected to wall socket and to the microscope.
	Bulb is not inserted into the socket correctly	Check to make sure the bulb is fully screwed into the socket
Poor image quality	Objective or eyepiece lenses are dirty	Clean the lenses
	Too much light	Adjust the diaphragm
	Slide is placed upside down on stage	Reposition slide more securely in the slide holder
No image	Nose piece not indexed properly	Revolve nose piece until the objective lens clicks into position
	Light is too bright	Adjust the diaphragm or light intensity control
Unable to focus slide	Slide is upside down	Flip the slide over with coverslip facing up
Visual field is blurry, dirty & with spots	The specimen slide, objective, or eyepiece lens is dirty	Clean the slides and lenses.
	Eyepiece or objective lens not fully screwed into place	Tighten eyepiece or objective lenses
Uneven illumination of field	Nosepiece not positioned properly	Revolve nosepiece until the objective lens clicks into position
	The diaphragm is not properly positioned	Adjust the diaphragm to the proper level
Objective lens collides with the slide when switching from a lower to a higher power objective	Slide is upside down or too thick	Use a lab-quality slide or flip the slide over so the cover slip is facing up
	Stage is set too close to the objectives	Lower the stage with the coarse focus knob

GENERAL MICROSCOPE CARE

Your microscope when treated with care, should provide years of use. Here are a few tips to keep your microscope in top shape:

- Cover the microscope or store it in the box when not in use. Store in cool dry place.
- Always carry the microscope with two hands. Do not drag the microscope or pick it up with the carrying arm.
- Always remove slides from the stage before putting the microscope away.
- Avoid touching the optical surface directly. Use lens cleaning tissue ONLY when cleaning the lenses.
- Ensure that the objective lenses do not touch the slide or the stage to avoid lens damage.
- Remove the batteries before storing the microscope for extended periods of time.

Warranty

Old Ted warrants this microscope to be free from defects in material and workmanship under normal use. This warranty does not cover light bulbs, batteries, or damage due to misuse, abuse, alterations, or accident. Warranty does not cover lenses that have become inoperable due to excessive dirtiness as a result of misuse or lack of normal maintenance.

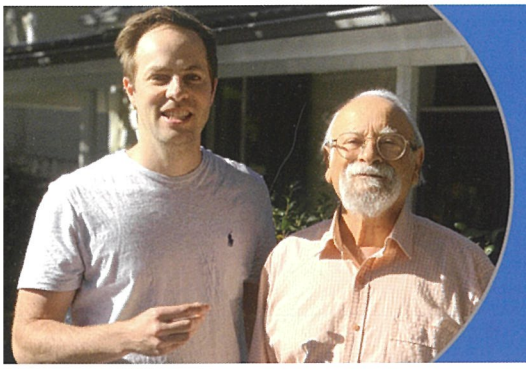
Please visit www.oldted.com/warranty to arrange warranty service before returning this instrument. Please note that warranties apply only to the original purchaser and are not transferable.

Contact Us

Thank you for supporting our small family business. We really appreciate your support.

If you have any questions, feedback or ways we can help, please contact us via hello@oldted.com

(P.S-if you could take 2 seconds and write us a Product Review... that would make our day)



Adam, my father in law is the brains behind our Microscope kit and after helping budding young scientists by being a school Chemistry teacher for 25+ years, we started Old Ted together....

We are a Mom and Dad team, small business owners who love to bring our personal touch to provide each for our customers, the highest quality product and service possible

OLD TED

Microscope kit

Building the Scientists of tomorrow, Today

We would love to hear from you with any questions, feedback or ways we can best serve you.

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