# Instruction Manual

*Congratulations on the purchase of **Omegon® Monoview, Microscopy Set, 1200x**. This microscope set is ideal for children older than 8 (eight) has it includes all tools and materials for the first discoveries in the world of biology and microscopy.*

**1. First a word of caution.**

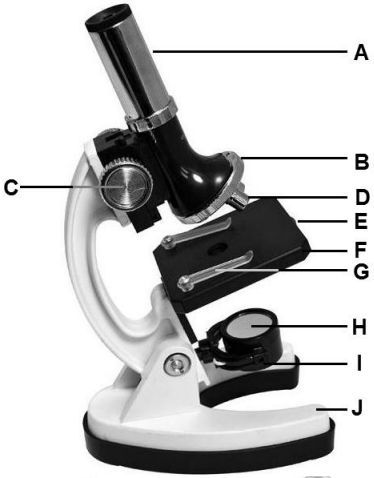
This set includes chemicals that may be harmful if misused therefore adult supervision is recommended. Children under the age of 8 (eight) should *NOT* use this product.

**1.1 Which chemicals may be harmful if misused?**

Gum Media and Eosin Dye – both are harmful if swallowed. Store and keep away from small children. In case of accident ingestion, please call immediately a doctor. Please read the *Safety Annex* at the end of this document for more information.

**2. Features**

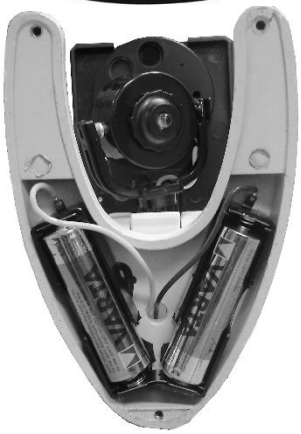
A- 10x eyepiece;
B- Objective revolver with 30x, 60x and 120x objectives.
C- Focus knob;
D- Objective Lens;
E- Filter wheel with 4 filters and 3 diaphragms.
F- Stage;
G- Stage clips;
H- Mirror;
I- Lamp;
J- Base/battery holder.




**2.1. Getting started.**

**2.1. Installing the two AA batteries (not included)**

Light must pass through the transparent specimen. It can either be done by using the supplied mirror (redirecting light to the specimen) or the built-in LED. We recommend using the built-in LED as it provides better light. The built-in LED requires power from two AA batteries (not included). To install the batteries remove the plastic cap on the base using a screwdriver cross type (not included). Place the batteries in the correct position and close the cap, make sure to re-tighten the 3 screws.



**Caution!**
Make sure to install the batteries in the correct orientation. Do not mix new and used batteries. Dispose conveniently the batteries when empty. Two 1.5V AA batteries are required (not included).

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### 3. What is included?

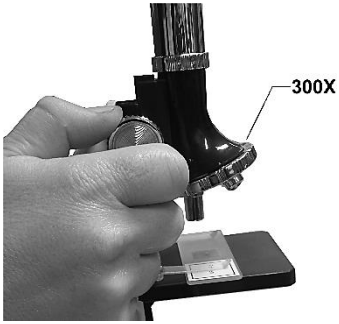
K- Test tubes (small) two units.
L- Slide covers/labels and statistical slide covers;
M- Test tube (big);
N- Tweezers;
O- Scalpel;
P- Pointer;
R- Microtome;
S- Specimens, sea salt, Brine shrimp eggs, gum media, Eosin dye.
T- Petri Dish;
U- Hatchery;
V- Specimen slides (5 prepared + 7 Blank).


### 4. Observing a specimen.

1. Select one of the supplied specimens slides (V).
2. Clip it to the stage clips (G).
3. A light source is required. One can use either the mirror or the built-in LED to divert light to the specimen.
4. Rotate the objective revolver (B) so that the magnification is 300x.
5. Rotate the focus knob so that the stage moves to the extreme position down.
6. Now peek through the eyepiece and slowly rotate the knob so that the stage moves up. You should now be able to see an image forming (becoming sharp) = focused.

Try different magnifications (by rotating the objective revolver (B)) and see the how the image differs with the different magnifications. Sometimes some specimens are better observed with low magnification so one can understand the relationships between the different structures.

**Please note**
1. make sure to lower the stage BEFORE rotating the objective revolver (B).
2. Objects are up-side down, make sure you take this into consideration when moving the specimen on the stage (F)
3. After observing flip the LED so it is turned off insuring a longer battery and LED longevity.



**5. Experimenting.**

There are two kinds of objects. Objects that reflect light (opaque) and objects that let the light go through (transparent). Opaque objects can be observed using a loupe while transparent objects by using a microscope.

Usually the magnifier can only produce a very small amount of magnification (3x to 10x) while a microscope reaches far more magnification (40x to 400x). For that reason the level of detail that can be seen is quite different. An object seen through a magnifier can be much more interesting when seen through a microscope. Below are some techniques that can be used to obtain the best of a sample.

**5.1. Turning an opaque object into a transparent one**

As mentioned before with a microscope one can see much more details as with a magnifier. To use a microscope one needs however a transparent object. An opaque object can be turned into a transparent one by cutting a slice (sample) so thin that the light can pass through.

**5.1.1. The wax technique**

For some soft objects a straight thin cut is difficult to do. There is a technique that allows to harden the object in order to get a thin slice (transparent). Start by melting a portion of candle wax in a pan. It should be enough to dip the sample in it. Grab the sample on one end and dip slowly so that the wax covers the sample. Then remove it slowly. Let it dry. The wax layer will get hard as it cools down. Now repeat the procedure to get another coat of wax on top of the previous one. Repeat again until you get about 3 to 4 layers of wax. The wax creates a hard surface and allows to cut a sample from the soft object. The sample can be placed on a sample holder and covered with a slide glass.

**5.2. How to make preparations?** There are two kinds of preparations – permanent and non-permanent.

**5.2.1. Permanent preparations**

These are done when a sample is to be repeatedly observed. The sample should be dried before set to the slide. A Fly's leg is dry and does not need to go through a dehydration process. But for example a sample of potato needs to be dried first.

**Caution:** Children should perform these preparations under adult supervision only!

**5.2.2. Short term preparations**

these are used when a sample is to be observed for a short time and then can be disposed. These are done for objects easy to find and prepare. Humid objects are usually easier to prepare and should be used for short term preparations. Place the sample on the object holder and put the cover glass on top of it.

There is a third option. For liquids (like water from a pond) just use the supplied pipette to get the sample and place a small drop on the blank slide. Let it dry and then observe it with the microscope.

**5.3. Here are some experiments you can do**

1. ***Sea Salt crystals***

Use the supplied Sea Salt bottle. Put a few Sea Slat crystals on a blank slide. Observe through the microscope. You will see the crystals have a cubic shape and they all have about the same size and shape.

### *2. Onion epidermal sample*

Onions consist of multiple layers on top of each other. There are two surfaces, the rough inner surface and the shine out surface. This is the surface that we are interested in. Remove the outer brownish skin from the onion and cut the onion in two halves (from top to root). Remove the first couple of layers to insure a fresh onion sample. Now you have a bowl shaped onion layer. Bend it outwards until it breaks. You will see a small transparent film holding the two halves. Peel it. This is the epidermal layer we are interested in. Cut a small portion of the epidermal layer and place it on the blank slide. To increase contrast we recommend putting a small drop of iodine on top. The iodine increases contrast. Now place the glass cover on top and let the Iodine flow on the sample surface. You are ready to use the sample. Please notice iodine is not included.

### *3. Sea water shrimps*

Sea shrimps are very particular animals. They live under extreme conditions in salt lakes. When the lake dries off the shrimp eggs can survive up to 10 years in a dormant state until better conditions come back. The eggs are very special and have a special protective coating that allows them to withstand hard environmental conditions. Once put back in sea water the eggs hatch. Shrimp larvae need to be fed to grow and turn into healthy shrimp adults. We have included a small bottle with yeast to feed the shrimps.

***How to hatch the shrimp eggs?*** We need to create a saline solution (sea water media) so the eggs can hatch. Use a container able to hold at least ½ litre of water. Pour some rain water to the container. It should be a little more than half a litre because of evaporation. Let the water rest for 24 hours. Put the container inside home were the temperature is stable and not too cold. Place half of the supplied salt in the water and stir so is dilutes easily. Now place the eggs and stir. The eggs take approximately 3 days to hatch. Remember to keep the container inside in a mild temperature (25 degrees) and let it get some light (but not direct sun light). Mark the water level. Make sure if the water evaporates to refill the container to its original water level. You can use the supplied hatchery. Place some of the liquid into one of the compartments and observe. After three days the eggs hatch. It is time to take care of this new generation of shrimps. Use the pipette to observe the eggs and the larvae. It is interesting to see how these develop. Place a drop of water with some larvae on the blank slide and observe. Each day you will see some slight changes as their bodies develop from larvae into an adult form. A generations takes about 10 weeks to reach adulthood. They will keep on reproducing if the conditions are favourable.

***How to feed the shrimps?***
Shrimps are resistant but they need to be kept fed and in good environmental conditions. Too much food with kill them, too little to. Use the supplied yeast to feed the shrimps. It is enough to feed them just a little every two days. If the water starts to get dark move your shrimps to a new saline solution as mentioned before.

# Safety Annex

A) In case of eye contact, rinse eyes with abundant water. Seek immediate medical attention.
B) Do not swallow. If swallowed wash the mount with abundant water. Do not vomit or induce vomiting. Seek immediate medical attention
C) Do not inhale. Operate in a ventilated environment.
D) Do not let the skin to contact these materials. Wash with soap and water.
E) In case of serious injury, seek immediate medical attention.