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Teaching guide in digital format



Minimum invoiced order: € 130,00 + VAT



## OPTIKA AB-Shield

Optika AB-Shield is a particular paint applicable to several surfaces, which guarantees the elimination and prevention of bacterial growth in sensitive areas of the instrument.

**This treatment guarantees a strong antibacterial effect thanks to the use of micro-silver, highly effective in destroying 99.9% of surface bacteria.**

The antibacterial effect remains for the entire duration of the painting and eliminates bad smells caused by bacteria. Efficacy against resistant bacteria such as MRSA, E-Coli, EHEC etc. is proven.

Optika AB-Shield is available as an option for your new microscope, thus making its use safer, especially when it needs to be shared among several people.

**The effectiveness has been successfully tested, following the standard international ISO 22196 “Measurement of anti-bacterial activity on plastic and other non-porous surfaces”, against *Staphylococcus aureus* DSM 346 / ATCC 6538P and *Escherichia coli* DSM 1576 / ATCC 8739.**

The tests conducted have obtained excellent results, verifying both the bacteriostatic properties (growth inhibitors) than bactericidal (killing of bacteria).



MICROSCOPY - On-field microscopy kits

These kits have been designed for outdoor use.

With them it is possible to collect samples of waters, grounds and insects and then to analyze them with a biological microscope or a stereo microscope.

Both kits are supplied with all instruments necessary to work on the field, and the supplied microscopes have a revolutionary illumination system.

Both instruments are able to keep working for the whole day with the rechargeable batteries (not provided) they are endowed with, thanks to the use of low-consumption LED light sources.

On-field stereomicroscopy kit

FLM-1

This kit is suitable for the research of insects and small animals living in lawns , in the ground, etc.

It contains the equipment for animal dissection.



Equipment supplied

4026	Centimetric insects magnifier 4x
4984	Magnifier Ø25 mm 10x with nipper
7006	Insect collector
7007	Landing net 10 cm
8135	Dissection board
15050	Dissection set
SFX-31	Binocular stereomicroscope, multi-plug
Z5	Plastic Petri dish Ø60 mm

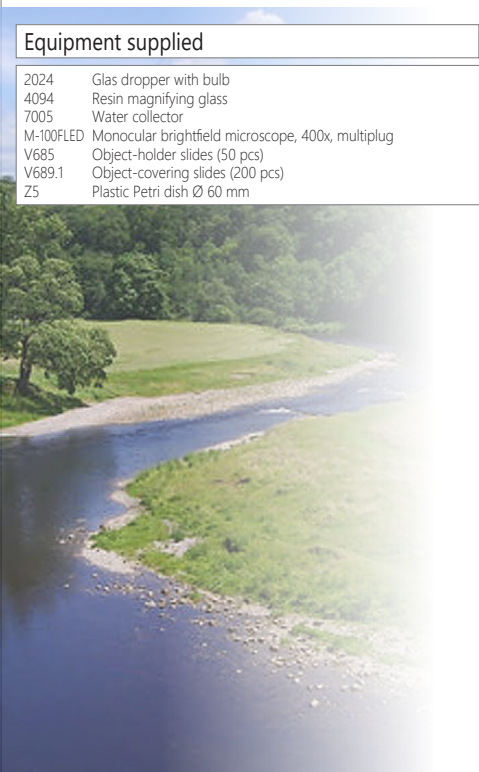


FLM-1

On-field microscopy kit

FLM-2

This kit is suitable for the research of micro-organisms living in the water of rivers, creeks and ponds.



Equipment supplied

2024	Glas dropper with bulb
4094	Resin magnifying glass
7005	Water collector
M-100FLED	Monocular brightfield microscope, 400x, multiplug
V685	Object-holder slides (50 pcs)
V689.1	Object-covering slides (200 pcs)
Z5	Plastic Petri dish Ø 60 mm



FLM-2



**B-60 SERIES**

A wide range of cordless, modern microscopes ideal for students and mainly primary schools with achromatic lenses, FN 18, finite optical system, coaxial focusing, StagErase™ erasable mechanical stage and 1 W LED illumination with rechargeable batteries. Slim and easy to carry, all the models are equipped with arm/wrist rest support to reduce the fatigue during use and long lasting LED illumination to provide over 20 years of use.

**StagErase™ erasable stage to remove scratches**

Here's something you've never seen before! This new, revolutionary stage is coated with a special painting to reduce accidental scratches to the minimum and facilitate their removal.

**Cordless use, totally independent from the mains connection**

All models work with or without the batteries (not provided) in place and are provided with three NiMH rechargeable batteries for outdoor use (4-hour autonomy, at medium intensity).

**Low voltage, external power supply for enhanced safety and convenient servicing**

OPTIKA's safety first approach drives to the use of a multi-plug, external power supply in order to prevent any risk of electric shock and heatflow inside the unit.

**Longlife LED illumination (providing over 20 years of use)**

Money & energy saving thanks to LED long lifetime (65.000 hours, 22 years in case of 8 hours/day) which is more than 20 times compared to a standard halogen bulb.

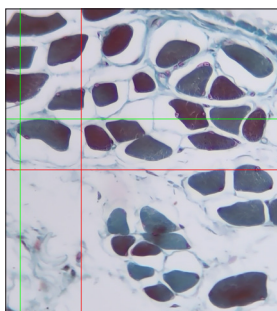
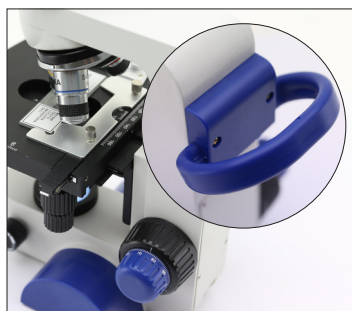
**NEW - New B-61V and B-62V bundles**

Equipped with a large 7" LCD monitor, they allow a comfortable real-time view of the preparations with the ability to share the experience with teachers and students.

The system allows the capture of images and videos, and is equipped with an SD card (included) to easily save your work. The resolution of the Full-HD sensor is 2Mp with frame rate at 30fps @ 1920x1080, intuitive menu with camera function controls and the ability to perform simple measurements. By removing the screen and replacing the head (always supplied), the instrument will become a conventional microscope for a direct visual experience.



Available models:  
B-61V e B-62V

**Monocular microscope****B-61**

Cordless, modern monocular microscope ideal for students and mainly primary schools with achromatic lenses (400x), FN 18, finite optical system, coaxial focusing, StagErase™ erasable fixed stage and 1 W LED illumination with rechargeable batteries. Slim and easy to carry, it is equipped with arm /wrist rest support to reduce the fatigue during use and long lasting LED illumination to provide over 20 years of use.



B-61

**Monocular microscope****B-65**

Cordless, modern monocular microscope ideal for students and mainly primary schools with achromatic lenses (1000x), FN 18, finite optical system, coaxial focusing, StagErase™ erasable mechanical stage and 1 W LED illumination with rechargeable batteries. Slim and easy to carry, it is equipped with arm /wrist rest support to reduce the fatigue during use and long lasting LED illumination to provide over 20 years of use.



B-65

**Binocular microscope****B-69**

Cordless, modern binocular microscope ideal for students and mainly primary schools with achromatic lenses (1000x), FN 18, finite optical system, coaxial focusing, StagErase™ erasable mechanical stage and 1 W LED illumination with rechargeable batteries. Slim and easy to carry, it is equipped with arm /wrist rest support to reduce the fatigue during use and long lasting LED illumination to provide over 20 years of use.



B-69

### B-60 Series - Comparison chart

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-61</b>	Monocular, 360° rotating, 45° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x	Fixed, 120x110 mm	Coaxial coarse and fine focusing	N.A. 0.65 with iris diaphragm	1 W LED, brightness control
<b>B-62</b>	Monocular, 360° rotating, 45° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x	Mechanical, 125x125 mm with 62x24 mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with iris diaphragm	1 W LED, brightness control
<b>B-63</b>	Monocular, 360° rotating, 45° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x, 60x	Mechanical, 125x125 mm with 62x24 mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with iris diaphragm	1 W LED, brightness control
<b>B-65</b>	Monocular, 360° rotating, 45° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x, 100x (oil)	Mechanical, 125x125 mm with 62x24 mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with iris diaphragm	1 W LED, brightness control
<b>B-66</b>	Binocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x	Mechanical, 125x125 mm with 62x24 mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with iris diaphragm	1 W LED, brightness control
<b>B-67</b>	Binocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x, 60x	Mechanical, 125x125 mm with 62x24 mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with iris diaphragm	1 W LED, brightness control
<b>B-69</b>	Binocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	Achromatic 4x, 10x, 40x, 100x (oil)	Mechanical, 125x125 mm with 62x24 mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with iris diaphragm	1 W LED, brightness control

### B-60 Series - Accessories

**M-001** Huygens 5x eyepiece  
**M-002.2** WF10x/18 eyepiece  
**M-003.2** WF15x/12 eyepiece  
**M-004.2** WF10x/18 micrometric eyepiece  
**M-008.2** WF10x/18 eyepiece, with pointer  
**M-162** WF20x/10 eyepiece  
**M-131** Achromatic objective 4x/0.10  
**M-132** Achromatic objective 10x/0.25  
**M-133** Achromatic objective 20x/0.40  
**M-134** Achromatic objective 40x/0.65  
**M-135** Achromatic objective 60x/0.85

**M-136** Achromatic objective 100x/1.25 (oil)  
**M-040** Attachable mechanical stage (only for B-61)  
**M-155.2** Polarising set (filters only)  
**M-114** 0.5x C-Mount projection lens  
**M-115** 0.35x C-Mount projection lens  
**M-118** 0.75x C-Mount projection lens  
**M-970** Plane-concave mirror, with base (only for B-61)  
**M-005** Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)  
**DC-001** Plastic dust cover, small, 340(l)x400(h) mm

**M-069** Solar charger  
**15008** Immersion oil, 10ml  
**15009** Immersion oil, 100ml  
**15104** Cleaning kit  
**AB-010** Antibacterial surface treatment, only for newly purchased microscope

## ECOVISION SERIES

Monocular biological microscopes designed especially for students attending primary school.

Obtain clear images at three (40x, 100x and 400x) powers with this basic series offering sturdy and compact structure but very easy to be carried. Choose the most suitable microscope according to the required application.

### Easy To Carry Solutions

This series is characterized by extreme compactness and portability as models can be moved easily in the classroom or even outdoors. The body of the microscope is slim and, according to the model, provided with a useful handle: the teaching activity will be facilitated and more enjoyable.

### Extremely Easy And Fast Vision

You find here the basic controls of an optical microscope and all you need to start learning to use a scientific instrument. Pre-aligned illumination and condenser simplify the operation and make necessary just the focusing of the specimen by using the dedicated knobs.

### LED - Optimized Illumination

Money & energy saving thanks to LED long lifetime (65.000 hours, 22 years in case of 8 hours/day) which is more than 20 times compared to a standard halogen bulb.



Easy and intuitive use for student



Long-life LED illumination





**ECOVISION Series - Technical features****Observation mode:** brightfield**Head:** monocular and binocular, 30° and 45° inclined, 360° rotating.**Eyepiece:** WF 10x/18.**Nosepiece:** Triple and quadruple revolving nosepiece, rotation on ball bearings.**Objectives:** Achromatic (4x, 10x, 40x) with an anti-fungus treatment.**Specimen stage:****B-20R:** round, 360° rotating, 90 mm diameter, with sample clips.**B-20CR:** double layer, 105x95 mm, moving range 50x15 mm.**M-100FX / M-100FLed:** fixed, 120x110 mm, with sample clips.**Focusing:****B-20R / M-100FX / M-100FLed:** Separate coarse and fine focusing mechanism with limit stop to prevent the contact between objective and

specimen.

**B-20CR:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.**Condenser:****B-20R:** diffusing filter with rotating diaphragm wheel.**B-20CR / M-100FX / M-100FLed models:** N.A. 0.65, fixed, iris diaphragm.**Illumination:****B-20R:** 0.3 W LED, manual brightness control, rechargeable batteries.**B-20CR:** 0.5 W LED, manual brightness control, rechargeable batteries.**M-100FX:** 1 W LED.**M-100FLed:** 0.5 W LED, manual brightness control, rechargeable batteries.**Monocular microscope B-20R**

Equipped with efficient LED illumination with rechargeable batteries (not provided) and comfortable handle, being ideal even for the youngest students.

**B-20R****Monocular microscope B-20CR**

Complete of mechanical stage, condenser, coaxial focus knobs and LED illumination with rechargeable batteries.

**B-20CR****Monocular microscope M-100FX**

Equipped with LED illumination, 45° inclined and 360° rotating head. Optional 60x and 100x objectives available.

**M-100FX****Monocular microscope M-100FLed**

Equipped with efficient LED illumination and internal rechargeable batteries which provides up to 8 hours of outdoor use. Optional 60x and 100x objectives available.

**M-100FLed****ECOVISION Series - Comparison chart**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-20R</b>	Monocular, 45° inclined, 360° rotating	WF 10x/18	Triple reversed	Achromatic 4x, 10x, 40x	X-Y moving, 360° rotating, 90 mm diameter, with sample clips	Separate coarse and fine	Diffusing filter with rotating diaphragm wheel	0.3 W LED, manual brightness control, rechargeable batteries
<b>B-20CR</b>	Monocular, 45° inclined, 360° rotating°	WF 10x/18	Triple reversed	Achromatic 4x, 10x, 40x	Double layer, 105x95 mm, moving range 50x15 mm	Coaxial coarse and fine	N.A. 0.65, fixed, iris diaphragm	0.5 W LED, manual brightness control, rechargeable batteries
<b>M-100FX</b>	Monocular, 45° inclined, 360° rotating°	WF 10x/18	Triple	Achromatic 4x, 10x, 40x	Fixed, 120x110 mm, with sample clips	Separate coarse and fine	N.A. 0.65, fixed, iris diaphragm	1 W LED
<b>M-100FLed</b>	Monocular, 45° inclined, 360° rotating°	WF 10x/18	Triple	Achromatic 4x, 10x, 40x	Fixed, 120x110 mm, with sample clips	Separate coarse and fine	N.A. 0.65, fixed, iris diaphragm	0.5 W LED, with brightness control, rechargeable batteries

**ECOVISION Series - Accessories****Accessori per B-20R / B-20CR****M-002.2** WF10x/18 eyepiece**M-003.2** WF15x/12 eyepiece**M-004.2** WF10x/18 micrometric eyepiece**M-008.2** WF10x/18 eyepiece, with pointer**M-162** WF20x/10 eyepiece**M-114** 0.5x C-Mount projection lens**M-115** 0.35x C-Mount projection lens**M-118** 0.75x C-Mount projection lens**M-005** Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)**M-069** Solar charger**DC-001** Plastic dust cover, small, 340(l)x400(h) mm**15104** Cleaning kit**Accessori per M-100FX / M-100FLed****M-001** Huygens 5x eyepiece**M-002.2** WF10x/18 eyepiece**M-003.2** WF15x/12 eyepiece**M-004.2** WF10x/18 micrometric eyepiece**M-008.2** WF10x/18 eyepiece, with pointer**M-162** WF20x/10 eyepiece**M-131** Achromatic objective 4x/0.10**M-132** Achromatic objective 10x/0.25**M-133** Achromatic objective 20x/0.40**M-134** Achromatic objective 40x/0.65**M-135** Achromatic objective 60x/0.85**M-136** Achromatic objective 100x/1.25 (oil)**M-114** 0.5x C-Mount projection lens**M-115** 0.35x C-Mount projection lens**M-118** 0.75x C-Mount projection lens**M-040** Attachable mechanical stage**M-099** Polarising set (filters and rotating stage)**M-005** Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)**M-069** Solar charger**DC-001** Plastic dust cover, small, 340(l)x400(h) mm**15008** Immersion oil, 10ml**15009** Immersion oil, 100ml**15104** Cleaning kit**AB-010** Antibacterial surface treatment, only for newly purchased microscope

## MICROSCOPES B-150 SERIES

The B-150 series has been designed to fulfill all requirements of educational laboratories. Obtain clear images at three (40x, 100x and 400x) or four (40x, 100x, 400x and 600x or 1000x) magnifications with 18mm field number. All in a compact and easy to carry size. The entire series is equipped with 1W LED illumination for bright and uniform light. If a cordless microscope is needed, the R Models are your choice as they come with a rechargeable battery.

### Same Objective For Oil And Water Use - Unparalleled Time & Money Savings

This new and revolutionary objective is something never seen before! Used with oil, it ensures the best achievable performance in terms of image resolution; with water, you get good quality and unparalleled comfort, eliminating all the tedious cleaning tasks typical of oil.

### The Most Comprehensive Series Dedicated to Students

B-150 comes in a variety of models to meet your needs. Standard brightfield, models with internal rechargeable batteries (R Models), with automatic light control (ALC Models), a version ready for polarization analysis (P Models), and models with built-in camera (D Models) for image acquisition.

### LED With Rechargeable Battery - Optimized Illumination

Money & energy saving thanks to LED long lifetime (65.000 hours, 22 years in case of 8 hours/day) which is more than 20 times compared to a standard halogen bulb.

**Rechargeable models** are equipped with N-PLAN objectives and have internal lithium rechargeable battery for up to 15 hours (at medium intensity) of outdoor use. All other models can be equipped with the optional external solar battery pack for field use.

### NEW - New bundles B-151V / B-153V / B-151R-PLV / B-152R-PLV / 159R-PLV

Equipped with a large 7" LCD monitor, they allow a comfortable real-time view of the preparations with the ability to share the experience with teachers and students.

The system allows the capture of images and videos, and is equipped with an SD card (included) to easily save your work. The resolution of the Full-HD sensor is 2Mp with frame rate at 30fps @ 1920x1080, intuitive menu with camera function controls and the ability to perform simple measurements. By removing the screen and replacing the head (always supplied), the instrument will become a conventional microscope for a direct visual experience.

### B-150 Series – Technical features

**Observation mode:** Brightfield, polarization.

**Heads:** monocular and binocular, 30° inclined. 360° rotating heads on all the models, except for ALC ones.

**Interpupillary distance:** adjustable between 48 and 75 mm.

**Dioptric adjustment:** on the left eyepiece.

**Eyepieces:** WF10x/18 mm.

**Nosepiece:** quadruple revolving nosepiece, rotation on ball bearings.

**Objectives:** HC - High Contrast (different magnifications available) with an anti-fungus treatment.

**Specimen stage:**

**B-151 models:** Fixed stage, 130x120 mm.

**B-153 / B-155 / B-157 / B-159 and B-150D models:** Mechanical stage, 126x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**B-150P models:** Rotatable round stage, 120 mm diameter.

**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

**Condenser:**

**B-151 models:** N.A. 0.65, pre-centered, fixed with iris diaphragm.

**B-153 / B-155 / B-157 / B-159 models:**

N.A. 1.2, pre-centered, adjustable height with iris diaphragm.

**B-150P models:** N.A. 1.2, pre-centered, fixed with iris diaphragm.

**B-150D models:** N.A. 1.2, pre-centered, adjustable height with iris diaphragm.

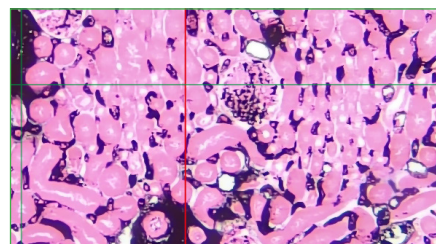
**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control.

Color temperature: 6,300 K.



Available models:

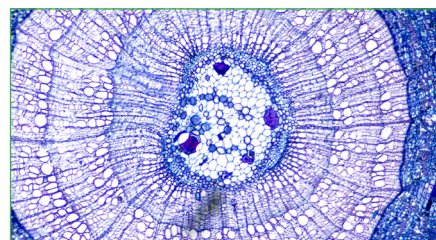
B-151V  
B-153V  
B-151R-PLV  
B-152R-PLV  
B-159R-PLV



Measurement lines in V models



Long-life LED illumination



Easy and intuitive use for beginners



HC

N-PLAN

**OPTIKA HC:** OPTIKA HC - objectives ensure a versatile and reasonably priced entry-level lenses for brightfield and simple polarization applications. They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18. Learn on how the 100x/1.25 (oil) operates by using water instead of oil at page 18.

**OPTIKA N-PLAN:** In addition to the advantages of the HC objectives, the total flatness of the field and an even greater contrast are achieved with the N-PLAN series. On all rechargeable models.



### Monocular microscope

**B-151**

Up to 400x total magnification with a precise and accurate positioning of the slide thanks to same clips.


**B-151**

### Binocular microscope

**B-157R-PL**

Equipped with rechargeable battery for very long outdoor operation of up to 15 hours. It allows precise and accurate positioning of the slide thanks to smooth movement of the mechanical stage and 600x as maximum magnification.


**B-157R-PL**

### Binocular microscope

**B-150D-BRPL**

Equipped with built-in camera with 3.1 MP resolution, double-layer mechanical stage and efficient X-LED<sup>1</sup> illumination.


**B-150D-BRPL**

## ALC - Automatic Light Control, Only Available At OPTIKA

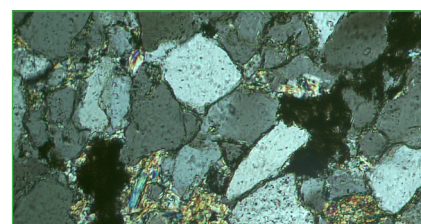
Incomparable Comfort With The Exclusive Automatic Light Control (ALC)

The intensity of the light is automatically adjusted by the microscope it self in order to maintain the same level as the one the user has previously chosen. No matter if the aperture of the diaphragm changes, if another objective is used, and if the opacity of the sample is different...the microscope will set the light for you according to your preferences. On **B-150ALC** series.



### Microscopes B-150P series

**B-150P** models are suitable for common observations with polarized light in the educational field, being microscopes designed for simple polarization analysis, with swing-out polarizer, slide-out analyzer and rotating stage. Entry-level microscopes for polarization analysis of birefringent samples, such as rock sections, minerals, fibers, transparent plastics, biological samples (e.g. bone sections).

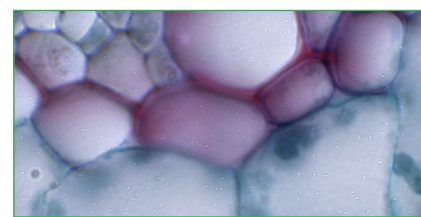


*Polarized light observation of Quartzite with B-150P and 10x objective*



### Microscopes B-150D series

**B-150D** models provide the best solution for interactive trainings, with the integration of a digital camera and everything necessary in a ready to use solution. If a cordless microscope is needed, the R Series works with rechargeable battery (not provided). This microscope allows to easily capture pictures and videos of all kinds of sample mounted on standard glass slides.



*Brightfield observation of dicotyledonous leaves with B-150D-BRPL and 100x objective*

### Accessories for B-150 Series

<b>M-001</b>	Huygens 5x eyepiece
<b>M-002.1</b>	WF10x/18 eyepiece, high eyepoint
<b>M-003</b>	WF16x/12 eyepiece
<b>M-004</b>	WF10x/18 micrometric eyepiece, high eyepoint
<b>M-008</b>	WF10x/18 eyepiece, high eyepoint, with pointer
<b>M-162</b>	WF20x/10 eyepiece
<b>M-137</b>	HC (high contrast) objective 4x/0.10
<b>M-138</b>	HC (high contrast) objective 10x/0.25
<b>M-139</b>	HC (high contrast) objective 20x/0.40
<b>M-141</b>	HC (high contrast) objective 40x/0.65
<b>M-142</b>	HC (high contrast) objective 60x/0.85
<b>M-143</b>	HC (high contrast) objective 100x/1.25 (oil)
<b>M-164</b>	N-PLAN objective 4x/0.10 (only for R-PL, MRPL, BRPL)
<b>M-165</b>	N-PLAN objective 10x/0.25

<b>M-166</b>	(only for R-PL, MRPL, BRPL) N-PLAN objective 20x/0.40 (only for R-PL, MRPL, BRPL)
<b>M-167</b>	N-PLAN objective 40x/0.65 (only for R-PL, MRPL, BRPL)
<b>M-168</b>	N-PLAN objective 60x/0.85 (only for R-PL, MRPL, BRPL)
<b>M-169</b>	N-PLAN objective 100x/1.25 (oil) (only for R-PL, MRPL, BRPL)
<b>M-040</b>	Attachable mechanical stage (only for B-151, B-151ALC and B-151R-PL)
<b>M-974</b>	Blue filter, 32mm diameter
<b>M-976</b>	Green filter, 32mm diameter
<b>M-978</b>	Yellow filter, 32mm diameter
<b>M-988</b>	Frosted glass filter, 32mm diameter

<b>M-155</b>	Polarising set (filters only)
<b>M-114</b>	0.5x C-Mount projection lens
<b>M-115</b>	0.35x C-Mount projection lens
<b>M-118</b>	0.75x C-Mount projection lens
<b>M-972</b>	Plane-concave mirror, with base
<b>M-005</b>	Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
<b>M-069</b>	Solar charger
<b>DC-002</b>	Plastic dust cover, medium, 490(l)x490(h) mm
<b>15104</b>	Cleaning kit
<b>15008</b>	Immersion oil, 10ml
<b>15009</b>	Immersion oil, 100ml
<b>AB-010</b>	Antibacterial surface treatment, only for newly purchased microscope

**B-150 - Standard Models, with HC Objectives**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-151	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x	Fixed, 130x120 mm, with sample clips	Coaxial coarse and fine, limit stop	N.A. 0.65, iris diaphragm, fixed	1 W X-LED <sup>1</sup> , manual brightness control
B-153	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control
B-155	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control
B-157	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control
B-159	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control

**B-150 - ALC Models, with Automatic Light Control and HC Objectives**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-151ALC	Monocular 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x	Fixed, 130x120 mm, with sample clips	Coaxial coarse and fine, limit stop	N.A. 0.65 fixed, with diaphragm	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
B-153ALC	Monocular 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
B-155ALC	Monocular 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
B-157ALC	Binocular 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
B-159ALC	Binocular 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>

**B-150 - Cordless Models, with N-PLAN Objectives and Li-Ion Rechargeable Batteries**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-151R-PL	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x	Fixed, 130x120 mm, with sample clips	Coaxial coarse and fine, limit stop	N.A. 0.65 fixed, with diaphragm	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-152R-PL	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-153R-PL	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-155R-PL	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-157R-PL	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-159R-PL	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery

**B-150 - Polarized Light Cordless Models, with N-PLAN Objectives and Li-Ion Rechargeable Batteries**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-150P-MRPL	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x	Round, 360° rotating, 120 mm diameter, with sample clips	Coaxial coarse and fine, limit stop	N.A. 1.25, iris diaphragm, fixed	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-150P-BRPL	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x	Round, 360° rotating, 120 mm diameter, with sample clips	Coaxial coarse and fine, limit stop	N.A. 1.25, iris diaphragm, fixed	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery

**B-150 - Digital Cordless Models, with N-PLAN Objectives and Li-Ion Rechargeable Batteries**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-150D-MRPL	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
B-150D-BRPL	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery



## MICROSCOPES B-190 SERIES

B-190 is the result of a perfect fusion between years of experience in microscopy and a refined design study. It represents our product philosophy at its best: quality, reliability and innovation, all in one. B-190 Series, the answer of OPTIKA Microscopes to the challenge of the future in the educational field.

### Same Objective For Oil And Water Use - Unparalleled Time & Money Savings

This new and revolutionary objective is something never seen before! Used with oil, it ensures the best achievable performance in terms of image resolution; with water, you get good quality and unparalleled comfort, eliminating all the tedious cleaning tasks typical of oil.

### Original, Compact And Robust

The original design of B-190 series is based on robustness, yet keeping the extreme portability of the instrument, with a dedicated handle on the back. The built-in LED illuminator and the patented version with Windows tablet improve the reliability of one of the best-sellers of OPTIKA in the educational field.

### Optimum And Unparalleled Comfort In Use

The B-190TBPL offers you a unique, incomparable solution. It includes a built-in camera of 3.1 MP and a Windows tablet with large touch screen, for a responsive and smooth control. Simultaneous camera and power connection ensure long-term operation, with dependable results in one click. It provides a reliable and comfortable solution for open discussion: 360° rotating and tilting tablet, easily detachable, that can be used as a laptop.

### X-LED<sup>2</sup> Exclusive Lighting Source

A special design of the lens in front of the LED gives a very high light intensity, while ensuring optimal uniformity of illumination on the whole field number. Relevant money & energy saving thanks to the incredibly low energy consumptions allow you to cut the electricity bills by 90%!



Planar **N-PLAN** objectives, guarantee bright and clear images with excellent flatness and compensation of chromatic aberration. Goals with antifungal treatment.

## B-190 Series - Technical features

**Observation mode:** brightfield.

**Heads:**

**B-191PL models:** monocular, 360° rotating and 30° inclined.

**B-192PL models:** binocular, 360° rotating and 30° inclined.

**B-193PL:** trinocular, 360° rotating and 30° inclined.

**B-190TBPL:** Digital model binocular with camera 3.1 MP and 10.1" tablet, 360° rotating and 30° inclined.

**Interpupillary distance:**

**B-190TBPL/B-192PL models:** adjustable between 48 and 75 mm.

**B-193PL models:** adjustable between 55 and 75 mm.

**Dioptric adjustment:** On the left eyepiece.

**Eyepieces:** WF 10x/18 mm.

**Nosepiece:** quadruple revolving nosepiece, rotation on ball bearings.

**Objectives:** Planar **N-PLAN** (different magnifications available) with an anti-fungus treatment.

**Specimen stage:**

Double layer mechanical sliding stage, 125x115 mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.

Adjustable tension of coarse focusing knob.

**Condenser:** N.A. 1.25, pre-centered, adjustable height with iris diaphragm.

**Illumination:** X-LED<sup>2</sup> with white 3 W LED and light intensity control.

Color temperature: 6,300 K.



X-LED<sup>2</sup> – Available only in OPTIKA



**Binocular microscope B-192PL**  
Binocular head with up to 1000x total magnification, mechanical stage and exclusive X-LED<sup>2</sup> for unmatched performance, powerful and uniform illumination.



**Trinocular microscope B-193PL**  
Trinocular head with up to 1000x total magnification, mechanical stage and exclusive X-LED<sup>2</sup> for unmatched performance for powerful and uniform illumination. All the OPTIKA cameras can be easily mounted and used straight away.

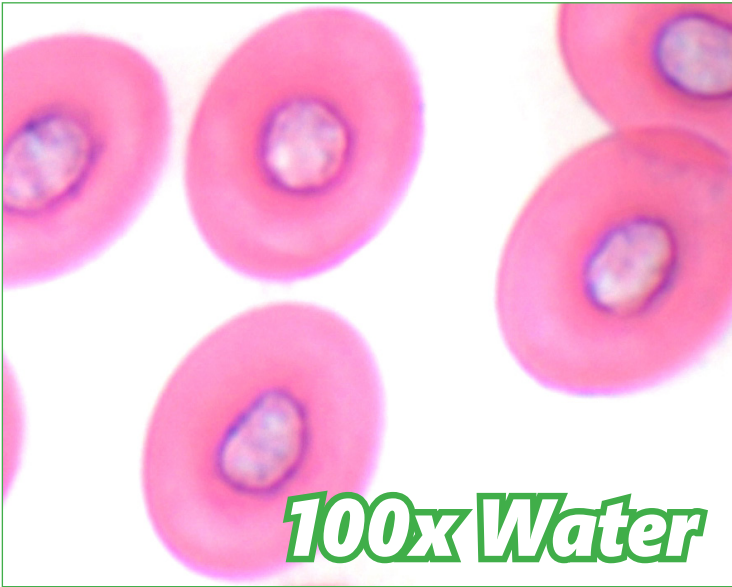
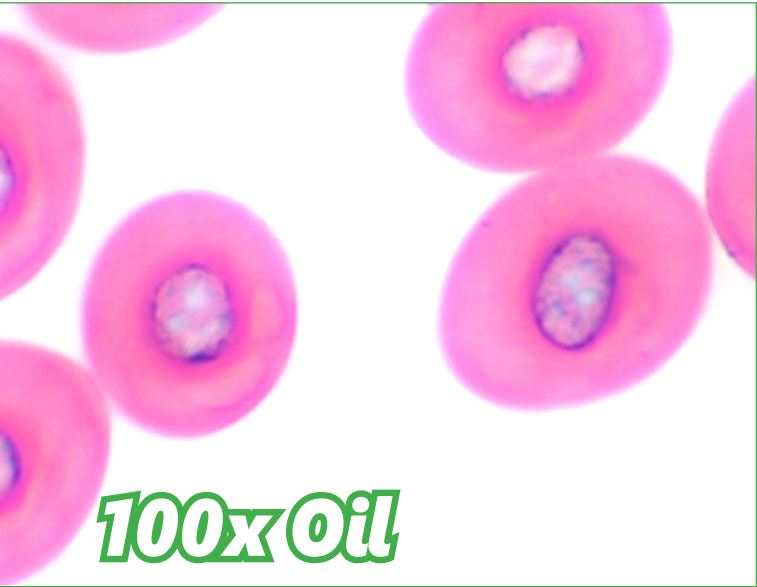


**Trinocular microscope B-190TBPL**  
3 MP Built-in camera and 10.1" Windows tablet PC up to 1000x total magnification, mechanical stage and exclusive X-LED<sup>2</sup> for unmatched performance for powerful and uniform illumination.



Microscopy - Comparison chart

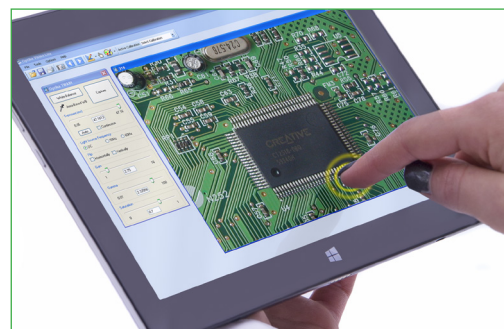
Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-191PL	Monocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED <sup>2</sup> system with adjustable intensity
B-191sPL	Monocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 60x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED <sup>2</sup> system with adjustable intensity
B-192PL	Binocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED <sup>2</sup> system with adjustable intensity
B-192sPL	Binocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 60x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED <sup>2</sup> system with adjustable intensity
B-193PL	Trinocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED <sup>2</sup> system with adjustable intensity
B-190TBPL	Binocular, digital 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED <sup>2</sup> system with adjustable intensity





## B-190TBPL

The latest OPTIKA digital microscopes with Windows tablet PC open new microscopy horizons, combining high-end optics with innovative digital technology for microscopic imaging. B-190TBPL includes a 3.1 MP camera with a 10.1" Windows tablet. View, capture, analyze and share your images with simplicity and reliability.



*Intuitive and powerful, simple and user-friendly, ideal for students and experienced users.*



*360° rotating and tilting to facilitate group work.*



*Easily detachable, can be used as a laptop!  
Equipped with Windows OS & Intel processor.  
Battery life up to 10 hours.  
Keyboard cod. TB-KBD2 sold separately.*

## Accessories for B-190 Series

M-001	Huygens 5x eyepiece
M-002.1	WF10x/18 eyepiece, high eyepoint
M-003	WF16x/12 eyepiece
M-004	WF10x/18 micrometric eyepiece, high eyepoint
M-008	WF10x/18 eyepiece, high eyepoint, with pointer
M-162	WF20x/10 eyepiece
M-164	N-PLAN objective 4x/0.10
M-165	N-PLAN objective 10x/0.25
M-166	N-PLAN objective 20x/0.40
M-167	N-PLAN objective 40x/0.65
M-168	N-PLAN objective 60x/0.85
M-169	N-PLAN objective 100x/1.25 (oil)
M-174	Polarising set (filters only)
M-974	Blue filter, 32 mm diameter
M-976	Green filter, 32 mm diameter
M-978	Yellow filter, 32 mm diameter
M-988	Frosted glass filter, 32 mm diameter

M-173	Photo adapter for APS-C and full frame reflex cameras (trino head)(only for B-193)
M-114	0.5x C-Mount projection lens
M-115	0.35x C-Mount projection lens
M-118	0.75x C-Mount projection lens
M-971	Plane-concave mirror, with base
DC-002	Plastic dust cover, medium, 490(l)x490(h) mm (except for B-190TB)
DC-003	TNT dust cover, medium, 600(l)x550(h) mm (only for B-190TB)
M-069	Solar charger
15008	Immersion oil, 10ml
15009	Immersion oil, 100ml
M-005	Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
15104	Cleaning kit
VP-190	IQ/OQ/PQ manual for B-190 series
VP-TB	IQ/OQ/PQ manual for TB series
TB-KBD2	Keyboard for tablet
AB-020	Antibacterial surface treatment, only for newly purchased microscope

## MICROSCOPES B-290 SERIES

This series incorporates all the experience gathered by OPTIKA Microscopes in the field of light microscopy, adapted specifically for routine laboratory brightfield applications. These microscopes are suitable for routine microscopy and have an ergonomic design for comfortable long-term use. All main controls are located close to each other, which enable operation with minimal movements.

### X-LED<sup>3</sup> Exclusive lighting source

Special technology able to double the light intensity for incomparable performance, ensuring constant pure-white 6000 K colour temperature.

This new technology allows you to save money, as the energy required for operation is very low.

### Rackless Mechanical Stage

Rounded edge rackless stage has been designed with a belt-driven mechanism that allows a smooth movement without any protruding part. This design gives you a more compact solution and lowers any risk of injury after accidentally hitting the rack with your hands.

Clear image achievable with 100X magnification (**now also in water**)

### Same Objective For Oil And Water Use - Unparalleled Time & Money Savings

This new and revolutionary objective is something never seen before! Used with oil, it ensures the best achievable performance in terms of image resolution; with water, you get good quality and unparalleled comfort, eliminating all the tedious cleaning tasks typical of oil.

### Laboratory Grade Optics, N-PLAN & IOS N-PLAN System

OPTIKA N-PLAN objectives ensure bright, clear images with excellent flatness and compensation for chromatic aberration. IOS Infinity-corrected optical system prevents image deterioration even if other optical components are added, such as polarizers, beamsplitters and so on.

### 20 mm Field Number

The F.O.V. (field of view) is based on a comfortable diameter of 20 mm. This means that a wide area of the sample can be inspected and allows a natural and easy view, particularly needed in a laboratory environment.

## B-290 Series - Technical features

**Observation mode:** brightfield, polarized light.

**Heads:**

**B-292 models:** binocular, 360° rotating and 30° inclined.

**B-293 models:** trinocular, 360° rotating and 30° inclined.

**B-290TB:** Digital model, binocular with camera 3.1 MP and 10.1" tablet, 360° rotating and 30° inclined.

**Interpupillary distance:**

**B-290TB/B-292 models:** adjustable between 48 and 75 mm.

**B-293 models:** adjustable between 55 and 75 mm

**Dioptric adjustment:** on the left eyepiece tube.

**Eyepieces:** WF 10x/18 mm.

**Nosepiece:** quadruple revolving nosepiece, rotation on ball bearings.

**Objectives:**

N-PLAN or IOS N-PLAN optical system (on PLi models) with an anti-fungus treatment.

Different magnifications available.

**Specimen stage:**

Double layer rackless mechanical sliding stage, 150x139 mm, 75x33 mm

X-Y movement range. Vernier scale on the two axes, accuracy: 0.1 mm.

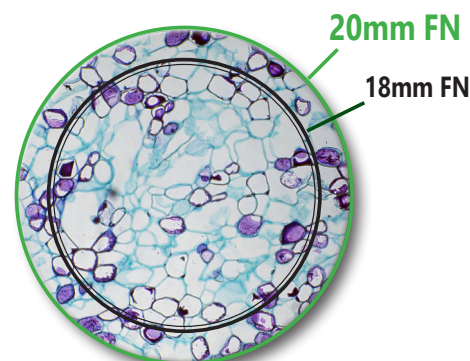
**Focusing:**

coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.

Adjustable tension of coarse focusing knob.

**Condenser:** N.A 1.25, centerable, adjustable height.

**Illumination:** X-LED<sup>3</sup> type with white 3.6 W LED and light intensity control. Color temperature: 6,300 K.

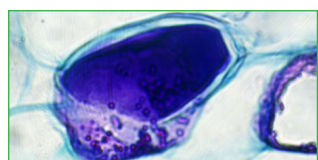


Field view di 20 mm

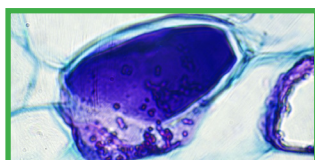


Trinocular microscope B-293

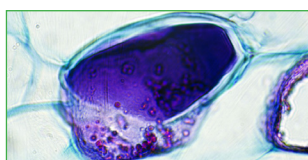
## B-290 Series - Zoom comparison



100x Dry



100x Water



100x Oil



**Binocular microscope****B-292**

Binocular head with N-PLAN objectives, rackless stage and exclusive X-LED<sup>3</sup> for unmatched performance, powerful and uniform illumination.

**B-292****Trinocular microscope****B-293PLi**

Trinocular head with IOS N-PLAN (infinity corrected) objectives, rackless stage and exclusive X-LED<sup>3</sup> for incredibly bright illumination.

**B-293PLi****Binocular digital microscope****B-290TB**

3MP Built-in camera and 10.1" Windows tablet PC with N-PLAN objectives, rackless stage and exclusive X-LED<sup>3</sup> for unmatched performance in illumination. Ideal for discussion group with 360° rotating tablet.

**B-290TB****B-290 Series - Comparison chart**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-292</b>	Binocular, 30° inclined, 360° rotating.	WF 10x/20	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x (oil/water)	Double layer, 150x139 mm, moving range 75x33 mm, X-axis rackless	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable and centrabale	3.6 W X-LED <sup>3</sup> , brightness control. Fixed Koehler
<b>B-292PLi</b>	Binocular, 30° inclined, 360° rotating.	WF 10x/20	Quadruple, reversed	IOS N-PLAN 4x, 10x, 40x, 100x (oil/water)	Double layer, 150x139 mm, moving range 75x33 mm, X-axis rackless	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable and centrabale	3.6 W X-LED <sup>3</sup> , brightness control. Fixed Koehler
<b>B-293</b>	Trinocular, 30° inclined, 360° rotating.	WF 10x/20	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x (oil/water)	Double layer, 150x139 mm, moving range 75x33 mm, X-axis rackless	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable and centrabale	3.6 W X-LED <sup>3</sup> , brightness control. Fixed Koehler
<b>B-293PLi</b>	Trinocular, 30° inclined, 360° rotating.	WF 10x/20	Quadruple, reversed	IOS N-PLAN 4x, 10x, 40x, 100x (oil/water)	Double layer, 150x139 mm, moving range 75x33 mm, X-axis rackless	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable and centrabale	3.6 W X-LED <sup>3</sup> , brightness control. Fixed Koehler
<b>B-290TB</b>	Binocular, 30° inclined, 360° rotating, with tablet.	WF 10x/20	Quadruple, reversed	N-PLAN 4x, 10x, 40x, 100x (oil/water)	Double layer, 150x139 mm, moving range 75x33 mm, X-axis rackless	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable and centrabale	3.6 W X-LED <sup>3</sup> , brightness control. Fixed Koehler

**Accessories for B-290 Series**

**M-001** Huygens 5x eyepiece  
**M-008.1** WF10x/20 eyepiece, high eyepoint, with pointer, rubber cup  
**M-160** EW10x/20 eyepiece, high eyepoint, with rubber cup  
**M-161** EW15x/16 eyepiece, with rubber cup  
**M-162** WF20x/10 eyepiece  
**M-163** EW10x/20 eyepiece, high eyepoint, with micrometric scale (10mm/100um) & rubber cup  
**M-144** IOS N-PLAN objective 4x/0.10  
**M-145** IOS N-PLAN objective 10x/0.25  
**M-146** IOS N-PLAN objective 20x/0.40  
**M-147** IOS N-PLAN objective 40x/0.65  
**M-148** IOS N-PLAN objective 100x/1.25 (oil)  
**M-149** IOS N-PLAN objective 60x/0.80  
**M-164** N-PLAN objective 4x/0.10  
**M-165** N-PLAN objective 10x/0.25  
**M-166** N-PLAN objective 20x/0.40  
**M-167** N-PLAN objective 40x/0.65  
**M-168** N-PLAN objective 60x/0.85  
**M-169** N-PLAN objective 100x/1.25 (oil)  
**M-634.1** IOS W-PLAN objective 50x/0.95 (oil)  
**M-1120.N** IOS W-PLAN PH objective 10x/0.25  
**M-1121.N** IOS W-PLAN PH objective 20x/0.40  
**M-1122.N** IOS W-PLAN PH objective 40x/0.65

**M-175** Rotating stage for polarising set (for 150x139mm rackless stage)  
**M-174** Polarising set (filters only)  
**M-184** Darkfield stop for condenser  
**M-975** Blue filter, 45mm diameter  
**M-971** Plane-concave mirror, with base  
**M-977** Green filter, 45mm diameter  
**M-979** Yellow filter, 45mm diameter  
**M-989** Frosted glass filter, 45mm diameter  
**M-1124.1** Brightfield condenser (with phase slider slot) (except for B-292, B-293 and B-290TB)  
**M-1124.NO** Phase contrast condenser with insert slide 10x/20x-40x (except for B-292, B-293 and B-290TB)  
**M-114** 0.5x C-Mount projection lens  
**M-115** 0.35x C-Mount projection lens  
**M-118** 0.75x C-Mount projection lens  
**M-173** Photo adapter for APS-C and full frame reflex cameras (trino head)  
**15104** Cleaning kit  
**15008** Immersion oil, 10ml  
**15009** Immersion oil, 100ml  
**DC-002** Plastic dust cover, medium, 490(l)x490(h) mm

(except for B-290TB)  
**DC-003** TNT dust cover, medium, 600(l)x550(h) mm (only for B-290TB)  
**M-005** Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)  
**M-069** Solar charger  
**M-1380** Centering telescope, 23mm diameter (except for B-292, B-293 and B-290TB)  
**VP-290** IQ/OQ/PQ manual for B-290 series  
**VP-TB** IQ/OQ/PQ manual for TB series  
**M-666.290** Applicable heating stage (for 150x139mm rackless stage), multiplug  
**TB-KBD2** Keyboard for tablet  
**AB-020** Antibacterial surface treatment, only for newly purchased microscope

MICROSCOPES SFX/STEREO SERIES

This series includes a wide selection of stereomicroscopes designed to satisfy every need in both teaching and amateur fields. The whole range is assembled according to the best technical standards. The optical system, due to its transparency, quality and depth, is at the top of its category. The series consists of different models, each designed to meet different needs.

SFX/STEREO Serie - Technical features

**Observation mode:** brightfield

**Heads:** Binocular heads  
45° inclined.  
SFX-51: 360° rotating heads.

**Interpupillary distance:**  
adjustable (for binocular heads).


**Dioptric adjustment:** ST-50Led on the left eyepiece.  
All SFX models: on both eyepieces.  
MS-1: without dioptric adjustment.

**Eyepieces:** All other models: WF 10x/20 mm.

**Objective:** Achromatic different magnifications available with an anti-fungus treatment.

**Stand:**  
SFX-31: Pillar stand with focus.  
SFX-33, SFX-51: Fixed stand with focus and handle.  
SFX-91 and SFX-91D: Precision fixed stand with focus and handle.  
ST-50Led: Overhanging stand with focus.

**Illumination:**  
SFX-31:  
incident: 1W LED, transmitted: 1W LED, dial brightness control, rechargeable batteries.  
SFX-33, SFX-51, SFX-91 e SFX-91D:  
Incident: 1W LED, transmitted: 1W LED, dial brightness control, rechargeable batteries.  
ST-50Led:  
Incident: 1W LED on flexible arm.





**LED with rechargeable batteries - Optimized Illumination**  
Money & energy saving thanks to LED long lifetime (50.000 hours, 20 years in case of 8 hours/day) which is more than 20 times compared to a standard halogen bulb. **All the SFX Series** has internal rechargeable (not provided) batteries for up to 8 hours (at medium intensity) of outdoor use.



Serie SFX/STEREO - Accessori opzionali

ACCESSORIES FOR SFX SERIES & ST-50Led	
ST-001	WF5x/22 eyepieces (pair), 30.5mm diameter (except for ST-50Led)
ST-002	WF10x/20 eyepieces (pair)
ST-003	WF15x/15 eyepieces (pair)
ST-004	WF20x/13 eyepieces (pair)
ST-005	WF10x/20 micrometric eyepiece
ST-001.1	WF5x/22 eyepieces (pair), 30mm diameter (only for ST-50Led)
ST-025	1x objective (only for ST-50Led)
ST-026	3.5x objective (only for ST-50Led)
ST-015	Glass object-plate, 60mm diameter (except ST-50Led)
ST-011	White/black object-plate, 60mm diameter (except for ST-50Led)
M-114	0.5x C-Mount projection lens
M-115	0.35x C-Mount projection lens
M-118	0.75x C-Mount projection lens
M-113.1	Ring adapter, 30mm (for monocular and binocular microscopes) (except ST-50Led)
M-113.2	Ring adapter, 30.5mm (for monocular and binocular microscopes) (only for ST-50Led)
DC-001	Plastic dust cover, small, 340(l)x400(h) mm (except for ST-50Led)
DC-002	Plastic dust cover, medium, 490(l)x490(h) mm (only for ST-50Led)
M-005	Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
15104	Cleaning kit
AB-010	Antibacterial surface treatment, only for newly purchased microscope



**Binocular microscope****SFX-31**

Binocular stereo microscope equipped with revolving revolver (2x-4x), column stand and incredibly powerful and uniform illumination (transmitted and incident) with rechargeable batteries.

**SFX-31****Binocular microscope****SFX-33**

Binocular stereo microscope equipped with revolver revolver (2x-4x) fixed stand with handle and incredibly powerful and uniform illumination (transmitted and incident), which can be set via the exclusive touch control. Powered by rechargeable batteries.

**SFX-33****Binocular microscope****SFX-51**

Binocular stereo microscope equipped with revolving revolver (2x-4x), 360 ° rotating head, fixed stand with handle and incredibly powerful and uniform illumination (transmitted and incident), which can be set via the exclusive touch control. Powered by rechargeable batteries.

**SFX-51****Binocular microscope****SFX-91D**

Digital binocular stereo microscope equipped with revolver revolver with 3 magnifications (1x-2x-4x), fixed precision stand with handle and incredibly powerful and uniform illumination (transmitted and incident), which can be set via the exclusive touch control. Powered by rechargeable batteries.

**SFX-91D****Binocular microscope****ST-50Led**

Binocular stereo microscope ideal for large samples. It allows a great working distance, is a fixed objective (2x), field 20 eyepieces, cantilever base and 1W LED with orientable incident light.

**ST-50Led****SFX/STEREO Series - Comparison chart**

Model	Head	Eyepieces	Objective	Working Distance	Stand	Illumination
<b>SFX-31</b>	Binocular, 45° inclined, fixed	WF 10x/20	2x – 4x selectable	57 mm	Pillar with focus	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
<b>SFX-33</b>	Binocular, 45° inclined, fixed	WF 10x/20	2x – 4x selectable	57 mm	Fixed with focus and handle	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
<b>SFX-51</b>	Binocular, 45° inclined, 360° rotating	WF 10x/20	2x – 4x selectable	76 mm	Fixed with focus and handle	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
<b>SFX-91</b>	Binocular, 45° inclined, fixed	WF 10x/20	1x – 2x – 4x selectable	60 mm	Precision fixed with focus and handle	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
<b>SFX-91D</b>	Binocular, 45° inclined, 3 MP integrated camera	WF 10x/20	1x – 2x – 4x selectable	60 mm	Precision fixed with focus and handle	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
<b>ST-50Led</b>	Binocular, 45° inclined, fixed	WF 10x/20	2x fixed	119 mm	Overhanging with focus	Incident: 1 W LED on flexible arm

## MICROSCOPES SLX SERIES

Cordless and modern stereo & stereozoom microscopes ideal for a variety of applications, including dissection, biology, entomology, anatomy, chemistry and material science among the others.

Provided with dual magnification (SLX-1) or 6.43:1 zoom ratio (SLX-2 e SLX-3), FN 21 high eyepoint with eyepieces for glasses wearers, fixed stand with focus and handle with high precision and focusing mechanism.

### High eyepoint eyepieces for glasses wearers

These eyepieces are designed in such a way that the exit pupil is further away from the eye lens than standard eyepieces, being well suited for eyeglasses wearers.

### The longest autonomy on the market ensured by EcoLED™

OPTIKA has re-designed illumination in microscopy, once again: a special coating process on optics combined with a new, higher ratio between low consumptions and ultra-efficiency has addressed us to top brightness levels.

### 6.43:1 zoom ratio - zoom magnification from 7x to 45x

Purposely designed for professional routine inspections, the total magnification can be even extended to 135x with 20x eyepieces and 1.5x additional lens, obtaining an excellent results in this class.

### Ultra-flat base with Ø 100 mm disc for diffused transmitted light

A new level of ergonomoy and comfort is achieved during operations, with the ultra-flat base of only 3 cm height to ensure smooth specimen movement and the Ø 100 mm for top class diffusion of the transmitted light.

### Longlife LED illumination (providing over 20 years of use)

Money & energy saving thanks to LED long lifetime (65.000 hours, 22 years in case of 8 hours/day) which is more than 20 times compared to a standard halogen bulb.

### Cordless use, totally independent from mains/batteries connection

All models work with or without the batteries in place and are provided with three NiMH rechargeable batteries for the longest autonomy in outdoor use (12-hour autonomy, at medium intensity)

### External power supply for enhanced safety and convenient servicing

OPTIKA's safety first approach drives to the use of a low voltage, multi-plug, external power supply in order to prevent any risk of electric shock and heatflow inside the unit.

### SLX Series - Technical features

**Observation mode:** brightfield

**Heads:** Binocular and trinocular, 45° inclined; 360° rotating.

**Dioptic adjustment:**

**SLX-1:** Left eyepiece.

**SLX-2 e SLX-3:** Both eyepieces.

**Eyepieces:** WF10x/21 mm, high eyepoint, secured by screw and with rubber cups.

**Objectives:**

**SLX-1:** dual magnification (2x-4x) with turnable objective.

**SLX-2 and SLX-3:** Parfocal achromatic zoom 0.7x...4.5x (6.43:1 ratio) with anti-fungus treatment.

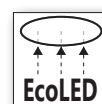
**Working distance** 100 mm.

**Stand:** High-grade, precision fixed with handle and focus.

**Focusing:** Rack and pinion focusing mechanism adjustable through the knobs located on both sides of the instrument.

**Illumination:** EcoLED™ swiveling incident and transmitted, with brightness control, rechargeable batteries.

**Color temperature:** 6.300 K. Multi-plug 100-240Vac/5Vdc external power supply.





**Binocular stereomicroscope SLX-1**

Binocular microscope with rechargeable batteries, FN 21 high eyepoint with eyepieces for glasses wearers, with turnable objective (2x-4x), and the latest technology of EcoLED™ illumination.

**SLX-1****Binocular stereomicroscope SLX-2**

Binocular microscope with rechargeable batteries, FN 21 high eyepoint with eyepieces for glasses wearers, with parfocal achromatic zoom 0.7x...4.5x (6.43:1 ratio) and the latest technology of EcoLED™ illumination.

**SLX-2****Trinocular stereomicroscope SLX-3**

Trinocular microscope with output for connection to an external camera equipped with rechargeable batteries, FN 21 high eyepoint with eyepieces for glasses wearers, with parfocal achromatic zoom 0.7x...4.5x (6.43:1 ratio) to work with additional lenses and the latest technology of EcoLED™ illumination.

**SLX-3****SLX Series - Comparison chart**

Model	Head	Eyepieces	Objective	Working Distance	Stand	Illumination
SLX-1	Binocular 45° inclined 360° rotating	WF 10x/21	2x – 4x selectable	100 mm	High-grade, precision fixed with handle and focus	EcoLED™ swiveling incident and transmitted with brightness control, rechargeable batteries
SLX-2	Binocular 45° inclined 360° rotating	WF 10x/21	0.7x...4.5x zoom	100 mm	High-grade, precision fixed with handle and focus	EcoLED™ swiveling incident and transmitted with brightness control, rechargeable batteries
SLX-3	Trinocular (50/50) 45° inclined 360° rotating	WF 10x/21	0.7x...4.5x zoom	100 mm	High-grade, precision fixed with handle and focus	EcoLED™ swiveling incident and transmitted with brightness control, rechargeable batteries

**Serie SLX - Accessori opzionali**

ST-036	Eye cups (pair), curved	M-620.3	1x focusable C-Mount adapter (only for SLX-3)
ST-081	EW10x/21 eyepieces (pair), high eyepoint, with rubber cup	M-113.1	Ring adapter, 30mm (for monocular and binocular microscopes)
ST-082	WF15x/15 eyepieces (pair), high eyepoint	M-114	0.5x C-Mount projection lens
ST-083	WF20x/10 eyepieces (pair), high eyepoint	M-115	0.35x C-Mount projection lens
ST-084	WF10x/21 micrometric eyepiece, high eyepoint, with rubber cup	M-118	0.75x C-Mount projection lens
ST-085.1	Additional lens 0.5x (w.d. 165mm) with SZ-EXT (only for SLX-2 & SLX-3)	DC-002	Plastic dust cover, medium, 490(l)x490(h) mm
ST-091	Additional lens 0.75x (w.d. 105mm) (only for SLX-2 & SLX-3)	15104	Cleaning kit
ST-086.1	Additional lens 1.5x (w.d. 45mm) with compensating disc (only for SLX-2 & SLX-3)	M-005	Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
ST-100.1	Hand moving stage, 100mm diameter	ST-092	Protective glass for stereohead
ST-110.1	Moving stage, coaxial knobs, 100mm diameter	VP-SLX	IQ/OQ/PQ manual for SLX series
ST-111.1	Moving stage, micrometric screws, 100mm diameter	ST-041	Sample clip
ST-040.1	Darkfield condenser, 100mm diameter	ST-042	White/black object-plate, 100mm diameter
ST-088.1	Polarising set (filters and rotating stage), 100mm diameter	ST-043	Glass object-plate, 100mm diameter
M-173	Photo adapter for APS-C and full frame reflex cameras (trino head) (only for SLX-3)	ST-666.1	Applicable heating stage (stereomicroscopes, 100mm diameter), multiplug
M-699	Universal adapter (only for SLX-3)	AB-020	Antibacterial surface treatment, only for newly purchased microscope
M-620	0.35x focusable C-Mount adapter (only for SLX-3)		
M-620.1	0.5x focusable C-Mount adapter (only for SLX-3)		
M-620.2	0.65x focusable C-Mount adapter (only for SLX-3)		

Tablet with integrated camera - TB Series

TB-3W / TB-5W

Exclusive tablet PC, powerful and versatile for a great user experience.  
Always one step forward to ensure the latest technology!  
For trinocular microscopes only. A 2-in-1 solution that you can use like a PC, being Windows-based.  
Powerful Intel processor ensuring top performance and speed. High-resolution, vivid color graphic display.  
Large touch screen of 10.1" with fast, responsive and smooth control.  
Attached camera available in 3.1 MP (TB-3W) or 5.1 MP (TB-5W) resolution.  
Holding solution for open discussion, 360° rotating. Includes the user-friendly and intuitive Optika Vision Lite software.



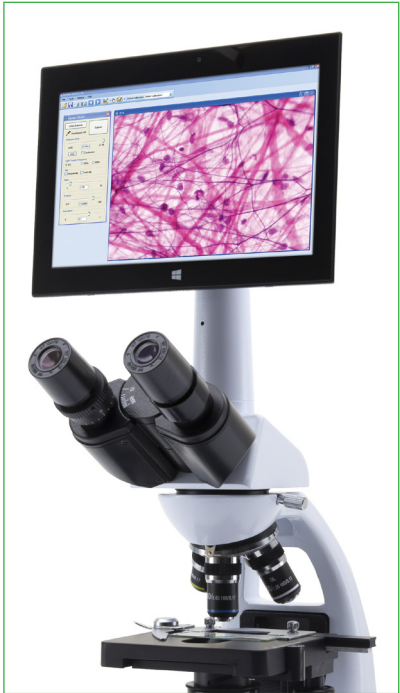
Keyboard code **TB-KD1** sold separately



CAMERA Technical specifications

Specifications CAMERA	TB-3W	TB-5W
Digital camera resolution	3.1 MP (2048 x 1536)	5.1 MP (2592 x 1944)
Signal output	USB 2.0	USB 2.0
Sensor Size	1/2"	1/2.5"
Sensor technology	CMOS	CMOS
Sensor type	Aptina CMOS	Aptina CMOS
Image format	4/3	4/3
Pixel size	3.2 x 3.2 µm	2.2 x 2.2 µm
Frame rate full resolution	12 fps (2048 x 1536)	7 fps (2592 x 1944)
Frame rate other resolutions	32 fps (1024 x 768); 45 fps (680 x 510)	27 fps (1280x 960); 90fps (640x 480)
Sensitivity	1 V/lux-second	0.53 V/lux-second
Signal / noise ratio	43 dB	40.5 dB
Dynamic range	61 dB	66.5 dB
ADC conversion	8 Bit	8 Bit
Color Depth	1 Bit ; 4 Bit; 8 Bit; 24 Bit	1 Bit; 4 Bit; 8 Bit; 24 Bit
Exposure Time	0.244 msec - 2 sec	0.294 msec - 2 sec
Binning	1x1; 2x2; 3x3	1x1; 2x2; 4x4
IR filter	380-650 nm (IR-cut filter)	380-650 nm (IR-cut filter)
Camera power	PC USB	PC USB
C-mount	YES	YES

Accessories included: C-mount projection lens, calibration slide, 1.8 m USB cable, 0.5 m USB cable and touch pen.



TB-3W / TB-5W



**USB 2.0 C-mount and Eyepiece Microscope Cameras****C-B Series**

Cameras have become indispensable nowadays and OPTIKA is offering a line of remarkable solutions for digital imaging.

OPTIKA B Series represents a cost-effective solution equipped with the latest technology sensors with more vivid colors and great contrast for stunning images. This series features Aptina CMOS sensor with excellent color reproduction, significantly high frame rates and several resolutions available to match any customer need.

Thanks to the convenience and simplicity, being extremely intuitive to install and operate, the OPTIKA B Series is recommended for educational and routine microscopes, also as eyepiece cameras (no need for additional adapters/rings in case of monocular and binocular microscopes).

All the main operating systems like Windows, IOS, Linux are supported.



*USB User-friendly cameras for general purposes.  
Superb results and vivid details from standard to high resolution.*



*Conveniently installable either on trinocular head or on monocular/binocular microscopes.*

**USB CAMERAS - B Series - Specifications**

Specifications CAMERA	C-B1	C-B3A	C-B5	C-B10+
Digital camera resolution	1.3 MP (1280 x 1024)	3.1 MP (2048 x 1536)	5.1 MP (2592 x 1944)	10 MP (3584 x 2748)
Signal output	USB 2.0	USB 2.0	USB 2.0	USB 3.0
Sensor Size	1/3"	1/2"	1/2.5"	1/2.3"
Sensor technology	CMOS	CMOS	CMOS	CMOS
Sensor type	Aptina CMOS	Aptina CMOS	Aptina CMOS	Aptina CMOS
Image format	5/4	4/3	4/3	4/3
Pixel size	3.6 x 3.6 µm	3.2 x 3.2 µm	2.2 x 2.2 µm	1.67 x 1.67 µm
Frame rate full resolution	15 fps (1280 x 1024)	12 fps (2048 x 1536)	7 fps (2592 x 1944)	7.2 fps (3584 x 2748)
Frame rate other resolutions	50 fps (320 x 256)	32 fps (1024 x 768); 45 fps (680 x 510)	27 fps (1280x 960); 90fps (640x 480)	24.5 fps (1792 x 1374)
Sensitivity	1 V/lux-second	1 V/lux-second	0.53 V/lux-second	0.31 V/lux-second
Signal / noise ratio	44 dB	43 dB	40.5 dB	34 dB
Dynamic range	71 dB	61 dB	66.5 dB	65.2 dB
ADC conversion	8 Bit	8 Bit	8 Bit	8 Bit - 12 Bit
Color Depth	1 Bit; 4 Bit; 8 Bit; 24 Bit	1 Bit ; 4 Bit; 8 Bit; 24 Bit	1 Bit; 4 Bit; 8 Bit; 24 Bit	1 Bit; 4 Bit; 8 Bit; 24 Bit
Exposure Time	0.14 msec - 2 sec	0.244 msec - 2 sec	0.294 msec - 2 sec	0.4 ms - 2 sec
Binning	1x1; 2x2; 4x4	1x1; 2x2; 3x3	1x1; 2x2; 4x4	1x1; 2x2; 4x4
IR filter	380-650 nm (IR-cut filter)	380-650 nm (IR-cut filter)	380-650 nm (IR-cut filter)	380-650 nm (IR-cut filter)
Camera power	PC USB	PC USB	PC USB	PC USB
C-mount	YES	YES	YES	YES

Accessories included: 0.37x (for 23 mm eyepiece tube), 30 mm & 30.5 mm diameter, calibration slide, 1.8 m USB cable

HDMI Cameras - H Series

The C-HB and C-HBSC models are composed of 1080p high definition cameras, which allow you to capture high quality images through a simple connection to a TV, monitor or projector via the HDMI output, representing a reliable and economical solution equipped with latest technology sensors with more vivid colors and excellent contrast for extraordinary images.

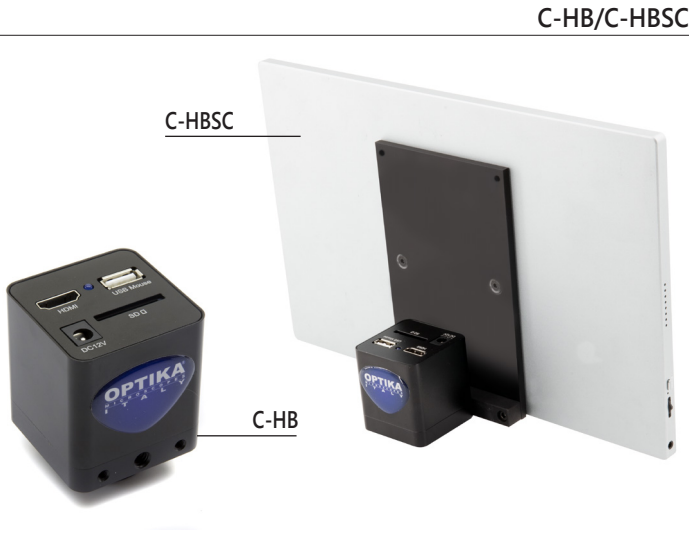
These models feature a first-class Sony CMOS sensor with excellent color reproduction and remarkably high frame rates. Thanks to their practicality and simplicity, being extremely intuitive to install and use, these models are perfect for various applications in the educational and professional fields.

The cameras can be controlled simply via a mouse and can record live video or capture images on a removable SD card.

The C-HBSC model includes an 11.5 " full HD monitor with a small footprint, which allows for screen adjustment to ensure correct posture and eliminate fatigue during observation.

This series of cameras allows you to easily measure samples or parts of them via software.

It also supports spreadsheet archiving.



C-HB / C-HBSC

HDMI / Wi-Fi Cameras

Intelligent and intuitive dual output camera (HDMI and Wi-Fi) with good resolution (up to 5MP), high quality SONY CMOS sensor and HDMI / Wi-Fi connection, recommended for routine operations and whenever needed measurements.

The acquisition of images and videos takes place directly on the SD card in HDMI mode and does not require software. It is possible to connect the camera to the PC (Windows) and use it via software (downloadable free of charge) that allows you to perform different types of measurements.

Adaptable to the ocular or trinocular tube of any brand of microscope through a special adapter (to be purchased separately).

Also available as an all-in-one (model C-WH5SC), space-saving package that includes a small footprint 11.5 " full HD monitor that allows for screen adjustment to ensure correct posture and eliminate fatigue during lecture. 'observation.

Wireless mouse, SD card and integrated software included.



C-WH5/C-WH5SC

CAMERA Technical specifications

	C-HB / C-HBSC	C-WH5 / C-WH5SC
Video resolution (Wi-Fi output)	-	2 MP
Video resolution (HDMI output)	HD 1080p	2 MP 1920 x 1080 (1080p)
Digital camera resolution	2 MP (1280 x 720)	5 MP (PC), 2 MP (HDMI)
Signal output	HDMI	HDMI, Wi-Fi
Sensor Size	1/2.8"	1/1.8"
Sensor technology	CMOS	CMOS
Sensor type	SONY STARVIS	SONY
Image format	16/9	16/9
Pixel size	2.9 x 2.9 µm	2.4 x 2.4 µm
Frame rate (HDMI)	60@1920X1080	60 fps (1920 x 1080 HDMI); 25 fps (1920 x 1080 Wi-Fi)
Sensitivity	1300 mV at 1/30sec	1120 mV at 1/30 s
Dark Signal	0.15mV at 1/30sec	0.15 mV at 1/30 s
Exposure Time	0.01 msec - 1 sec	0.03 ms - 918 ms
Binning	1x1	1x1
IR filter	380-650 nm (filter IR-cut)	380-650 nm (filter IR-cut)
Camera power	DC 12V/1A	DC 12V/1A
C-mount	Yes	Yes
White balance	Auto/Manual	Auto/Manual
Gain control	Yes	Yes
Exposure control	Auto/Manual	Auto/Manual

Included accessories: C-HB / C-HBSC: HDMI cable, SD card, wireless mouse, multi-plug adapter, calibration slide.  
C-WH5 / C-WH5SC: HDMI cable, SD card, wireless mouse, 2 multi-plug adapters, calibration slide.

Monitor technical specifications

	C-HBSC / C-WH5SC
Display size	11.5"
Display resolution	1920x1080
Contrast ratio	1000:1
Brightness (lumen)	350
Monitor power supply	DC 12V/1.5 A
Input	HDMI
Dimensions (mm)	281x180x14
Weight (kg)	0,4



## WIFI Cameras - WF Series

## C-WF2

Intuitive **Wi-Fi camera**, affordable and easy to use, with CMOS sensor and direct Wi-Fi connection, recommended for basic and general school applications. Suitable for use in an interactive digital classroom, it maximizes the efficiency of learning processes.

Direct Wi-Fi, no router required.

Ready for use on any microscope with direct connection to the ocular or trinocular tube, thanks to the included C-Mount lens.

Downloadable software included (Windows, Mac OS or Linux), always available to allow for the latest updates.

## Technical specifications

CAMERA Specification	C-WF2
PC Camera resolution (MP)	4 MP
WiFi resolution (MP)	4 MP
Camera resolution (n° of pixels: W x H)	2688x1512
WiFi signal output	Yes
Color / Monochrome	Color
Sensor Technology	CMOS
Sensor Size	1/1.8"
Sensor Technology	CMOS
Sensor Type	SONY EXMOR
Rolling shutter	Yes
Image Format	16/9
Pixel Size (mm)	2.9x2.9
Frame rate full resolution (fps)	30@2688*1512
WiFi speed	802.11n 150Mbps
WiFi Signal	From the camera
WiFi Signal ready	About 10 seconds after turning on
Max Users connected to a single camera	3
Sensibility	1V/lux-sec
Signal/Noise Ratio (DB)	43
Dynamic Range (DB)	61
ADC Conversion	8 Bit - 12Bit
Color Deep	8 Bit
Exposure Time	Auto
Binning	1x1
IR Filter	Yes
Range IR Filter (nm)	380-650 (IR CUT)
Camera power supply	5 Vdc 500mA
C-Mount	Yes
Dimension (mm)	50 x 50 x 112
Weight (Kg)	0.19
<b>Accessories included</b>	
Optical adapter (for 23mm eyepiece tube)	0.5x
Diameter of adapter ring (mm)	30 e 30.5
Calibration slide	Si
USB cable	1.8m



C-WF2



*All-in-one WiFi camera  
It does not need a router!*



Eyepiece camera with CCD sensor

VC-05

Simple eyepiece camera with CCD sensor, 420 TV Lines (PAL)



	VC-05
Digital camera resolution	NO
Analog camera resolution	PAL 582 x 420
Signal output	PAL
Audio Signal	NO
Sensor Size	1/3"
Sensor technology	CCD
Image format	4/3
Full Image size	-
Frame rate full resolution	50 frames\sec (analog mode)
Max Exposure time	-
ON board Memory	NO
External Memory Card	NO
External camera power	12V DC power supply
White Balance	Auto
Gain Control	Auto
Back light control	Auto
Exposure control	Auto
C-Mount connection	NO
CS-Mount connection	NO
Arm length	-
Obiettivo 8 mm	NO





**OPTIKAM C-E2****C-E2**

User-friendly eyepiece camera to be combined with any microscope.

- Direct connection into the eyepiece tube instead of one of the eyepieces (23mm, 30mm & 30.5mm diameter)
- No additional adapters required
- Very useful for educational purposes
- Removable miniUSB cable
- Includes the user-friendly and intuitive OPTIKA Pro View & OPTIKA Lite View.



	OPTIKAM C-E2
Digital camera resolution	2 MP
Analog camera resolution	NO
Signal output	USB 2.0
Audio Signal	NO
Sensor Size	1/3.2"
Sensor technology	CMOS
Image format	4/3
Full Image size	1600 x 1200
Frame rate full resolution	5 frames\sec (1600×1200) / 7,5 frames\sec (1280×1024) / 22 frames\sec (640×480)
Max Exposure time	Auto
ON board Memory	NO
External Memory Card	NO
External camera power	PC USB
White Balance	Auto
Gain Control	Auto
Back light control	Auto
Exposure control	Auto
C-Mount connection	NO
CS-Mount connection	NO
Arm length	-
8mm objective	NO

**C-E2**

## MICROSCOPE SLIDES

**Pack of 50 object-holder slides.** V685

Dimensions: 25.4 x 76.2 mm; thickness: 1-1.2 mm. Ground edges.

**Object-holding slide with 1 hollow.** V757

**Object-holding slide with 2 hollows.** V758

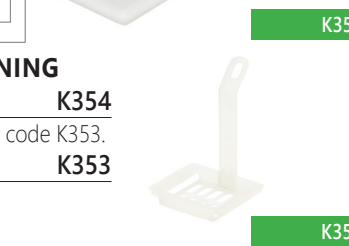
**Object-holding slide with 3 hollows.** V759

**Object-holding slide distributor.** K540

The slides come out one at a time when the knobs are turned. Capacity: 50 slides.

**Pack of 200 object-covering slides 18x18 mm.** V689.1

**Pack of 1000 object-covering slides 18x18 mm.** V689



## EQUIPMENT FOR THE PREPARATION OF SLIDES

**Straight points tweezers. 120 mm, stainless steel.** F340

**Curved points tweezers. 120 mm, stainless steel.** F344

**Round points tweezers. 120 mm, stainless steel.** F329

**Flat points tweezers. 105 mm, stainless steel.** F327

**Potbellied blade steel scalpel, detachable blade** F361

**Disposable scalpel, plastic handle** F364

**Scissors for microscopy.** F950

**Double flexible spatula . 120x6 mm, stainless steel.** F760

**Needle with handle. 130 mm.** F322

**Lance needle with handle. 130 mm.** F323

**Drum microtome with hand razor.** SM2713



**Set of microscopy accessories** 15050

The set is composed of: ruler, thin point scissors, laboratory scissors, straight point tweezers, round point tweezers, interchangeable blade scalpel, 1 blade for scalpel and two needles with handle.

**Microscopy toolbox** 15001

Toolbox containing: scalpel, scissors, spatula, needle with scissors, round point tweezers, curved point tweezers, magnifying glass, 6 bottles of fundamental dyes, 3 glass bottles, 2 droppers, 2 watch glasses, 1 bottle of Canada balsam, 1 bottle of xylene, 1 bottle of ethyl alcohol, 50 object-holding slides, 200 object-covering slides.



## STAINS AND REAGENTS FOR MICROSCOPY

**6 fundamental stains in bottles of 10 ml.** 15002

Methylene blue, eosin, gentian violet, nigrosine, neutral red, Lugol solution.

**Ethyl alcohol 25 ml.** 15006

**Canada Balsam 10 ml.** 15007

**Oil for immersion eyepieces 10 ml.** 15008

## EQUIPMENT FOR SLIDE-STAINING

**Slide-staining box.** K354

20 spaces to be immersed into a basin code K353.

**Basin for slide-staining.** K353

Dimension: 100 x 80 x70(h) mm.



## EQUIPMENT FOR CLEANING AND MAINTENANCE OF MICROSCOPES

**Cleaning kit** 15101

It contains air brush with cap, pack of optical cards, cleanser liquid, antistatic cloth 20x20 cm, wadding, plastic case.



**Compressed air spray** 15102

Suitable for cleaning objective and eyepieces, it has a small tube to reach the hidden parts, too. Pack of 400 ml.

**Two-lens magnifier****4986**

It is composed of two lenses whose diameter is 22 mm. First lens magnification: 4x; second lens magnification: 6x; total magnification: 10x.

**Magnifier with millimetric scale****4987**

8x magnifier with front opening and millimetric ruler for measurement.

Measure interval: 0,1 mm. Endowed with focusing adjustment.

Dimensions: 42x42x45h mm.

**Counting glass with millimetric scale****4090**

5x counting glass with double millimetric ruler for measurement.

Measurement interval: 1 mm. Dimensions: 40x52x52h mm.



4986 - 4987 - 4090

**3x magnifier****4091**

Endowed with front opening.

Dimensions: 47x59x56h mm.



4091

**6x magnifier****4985**

Diameter: 66 mm. Height: 55 mm.



4985

**2x-4x magnifying glass****4980**

Double magnification lens: inside the 2x lens (diam. 70 mm) there is a lunette with 4x magnification (diam. 16 mm).

**Giant magnifying glass****4981**

Diameter: 145 mm, long-distance functioning. Magnification: 2x.



4980 - 4981

**Big model of Two-sides viewer****4988**

Simple viewer to observe the life of insects and grubs.

Separable into 3 parts.

Magnification: 6x.

Dimension: 190x130x130h mm.



4988

**7x magnifier****4088**

The item is suitable for the observation of small insects.



4088

**Lens with support pincer****4984**

6x magnifying lens with pincer for samples.



4984

**100x pocket microscope****4086**

Magnification from 60x to 100x; it is supplied with zoom and focus adjustment. Built-in light bulb powered by batteries.



4086

**Magnifying lens with handle-stand endowed with built-in light bulb****4982**

2x-4x double magnification lens. With double-function handle: stand (open) and light bulb (batteries-powered).



4982

**3x giant magnifier****4087**

It has rulers with millimetric graduation. Lens diameter: 110 mm. Dimensions: 160x130x180h mm.



4087

**8x magnifying glass with built-in light bulb****4092**

Lens diameter 25 mm. It is endowed with front opening and battery-powered light bulb.



4092

**Centimeter-graduated magnifier for insects****4026**

With ventilation holes in order to observe alive insects.

With double 2x - 4x lens.

Chamber dimensions:

Ø 70 mm, height 75 mm.

Dimensions: 160x130x180h mm.



4026



## General biology - Basic kit

MZ-1000

1. Unicellular animal (Ameba or other)
2. Paramecium, whole body
3. Hydra, whole body
4. Daphnia, whole body
5. Lumbricus (earthworm), cross section
6. House fly, mouth part, whole body
7. Honey bee, mouth part, whole part
8. Honey bee, hind leg
9. Three type of bacteria, smear
10. Simple flat epithelium, whole body
11. Skeletal muscle, longitudinal section and cross section
12. Human blood smear
13. Frog blood smear
14. Lung section
15. Artery and vein, cross section
16. Human skin section through hair follicle
17. Spirogyra conjugation, whole body
18. Volvox, whole body
19. Moss, whole body
20. Mitosis, onion root tip cell, section
21. Monocot and dicot, roots , cross sec.
22. Monocot and dicot shafts , cross sec.
23. Tilia (linden tree), 1 year old stem, cross sec.
24. Tilia (linden tree), 3 years old stem, cross sec.
25. Monocot and dicot leaves, cross sec.

## Freshwater plants (cryptogams)

MZ-2000

1. Three types of bacteria, smear
2. Rhizopus nigricans (breadmold), whole body
3. Penicillium, whole body
4. Aspergillus, whole body
5. Yeast, whole body
6. Lichen, section
7. Volvox, whole body
8. Spirogyra conjugation, whole body
9. Porphyra (sea lettuce), whole body
10. Marchantia thallus, section
11. Marchantia antheridiophore, longitudinal sec.
12. Marchantia archegoniophore, longitudinal sec.
13. Moss, protonema, whole body
14. Moss, antheridium, cross section
15. Fern prothallus, young sporophyte, whole body

## Phanerogams

MZ-3000

1. Pine tree, leaf , cross sec.
2. Pine tree, 1 year old stem, cross sec.
3. Pine tree, 10 years old stem, cross sec.
4. Pine tree, spherical male fruit, longitudinal sec.
5. Pine tree, spherical female fruit, longitudinal sec.
6. Pine tree, pollen, whole body
7. Buttercup, root, cross sec.
8. Corn (mais), root, cross sec.
9. Mitosis, onion tips, section
10. Geranium stem, cross sec.
11. Corn (zea mays), stem, cross sec.
12. Corn (zea mays), stem, longitudinal sec
13. Sunflower, young stem, cross sec.
14. Tilia (linden tree), 1 year old stem, cross sec.
15. Tilia (linden tree), 3 years old stem, cross sec.
16. Lily, leaf, cross sec.
17. Fig tree , leaf with foveolate stomata, cross sec.
18. Three types of leaves, cross sec.
19. Lily pollen, whole body
20. Lily anther, cross sec.
21. Lily ovary, cross sec.
22. Meiosis, cross section of lily anther at different phases
23. Capsella, young embryo, section
24. Capsella, medium embryo, section
25. Capsella, old embryo, section

## Zoology - Vertebrates and insects

MZ-4000

1. Unicellular animal (Ameba or other)
2. Paramecium, whole body
3. Hydra, whole body
4. Hydra, sperm gland, cross section
5. Hydra ovary, cross section
6. Male nematode, cross section (ascaris megalocephala)
7. Female nematode, cross section (ascaris megalocephala)
8. Egg mitosis of a horse's nematode (ascaris mega locephala)
9. Tubellaria, injected intestinal tube, whole body
10. Mussel Gill, cross section
11. Mosquito male, mouth parts, whole body
12. Female mosquito, mouth parts, whole body
13. Butterfly, mouth parts, whole body
14. Honey bee, mouth parts, whole body
15. Testis of migratory locust, section
16. Insect's composed eye, section
17. House fly, whole body
18. Female mosquito, whole body
19. Drosophila (fruit fly), whole body
20. Insect, legs for digging, whole body
21. Insect, legs for walking, whole body
22. Insect, legs for swimming, whole body
23. Insect, legs for jumping, whole body
24. Insect, leg for pollinating, whole body

## Zoology - Vertebrates and mammals

MZ-5000

1. Frog skin, cross sec.
2. Frog small intestine, cross sec.
3. Frog blood smear
4. Frog testis, section
5. Frog liver, section
6. Frog, heart, sect.
7. Rabbit liver, sec.
8. Rabbit testis, sec.
9. Rabbit vertebral column, cross sec.
10. Rabbit, motor nerve endings, whole body
11. Rabbit ovary, section
12. Compact bone tissue
13. Stomach walls, section
14. Small intestine, cross section (mamal)
15. Large intestine, cross sec. (mammal)
16. Pancreas (mammal)
17. Spleen, sec. (mammal)
18. Gall bladder, sec. (mammal)
19. Lung, sec. (mammal)
20. Artery and vein, cross sec. (mammal)
21. Kidney, longitudinal sec. (mammal)
22. Human sperm, smear
23. Human skin, sec. through sweat gland
24. Eye ball, longitudinal sec.(mammal)
25. Human Chromosome in blood, male and female

## Set of 5 slide kits

MZ-5556

This article contains the following collections of slides:

MZ-1000 - General biology - Basic kit  
MZ-2000 - Freshwater plants (cryptogams)  
MZ-3000 - Phanerogams  
MZ-4000 - Zoology - Vertebrates and insects  
MZ-5000 - Zoology - Vertebrates and mammals

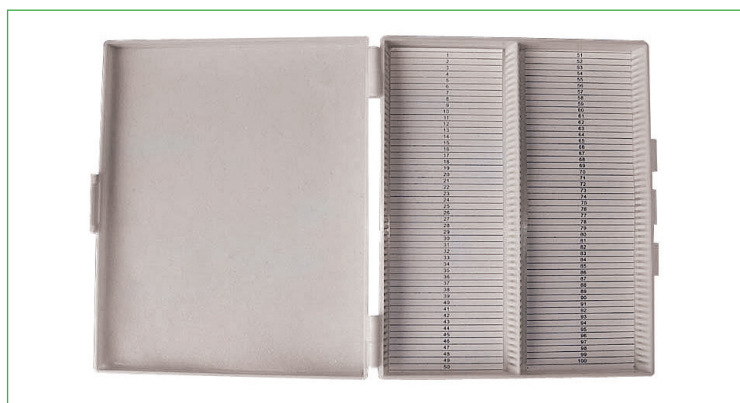
**PREPARED SLIDES - SINGLE SLIDE**

Artery and vein, cross sec. (mammal)	<b>MZ-2057</b>
Ascaris female, c.s.	<b>MZ-1021</b>
Ascaris male, c.s.	<b>MZ-1020</b>
Unicellular animal (euglena, W.M.)	<b>MZ-1002</b>
Lily anther, cross sec.	<b>MZ-3167</b>
Honey bee, mouth parts, whole body	<b>MZ-1031</b>
Honey bee, hind leg	<b>MZ-1037</b>
Aspergillus, W.M.	<b>MZ-3004</b>
Mussel gill, cross sec.	<b>MZ-4028</b>
Eyeball, longitudinal sect. (mammal)	<b>MZ-2077</b>
Capsella, young embryo, section	<b>MZ-3177</b>
Capsella, medium embryo, sect.	<b>MZ-3178</b>
Capsella, old embryo, sect.	<b>MZ-3179</b>
Gall bladder, sec. (mammal)	<b>MZ-2052</b>
Rabbit, motor nerve endings, whole body	<b>MZ-2031</b>
Rabbit, vertebral column, cross sec.	<b>MZ-2027</b>
Rabbit liver sec.	<b>MZ-4047</b>
Rabbit ovary sec.	<b>MZ-2062</b>
Rabbit testicle, sec.	<b>MZ-4051</b>
Human chromosomes in blood, male and female	<b>MZ-4063</b>
Daphnia W.M.	<b>MZ-1009</b>
Drosophila (fruit fly), whole body	<b>MZ-1067</b>
Epithelium, whole body	<b>MZ-2001</b>
Butterfly, mouth parts, whole body	<b>MZ-1032</b>
Fig tree , leaf with foveolate stomata, cross sec.	<b>MZ-3137</b>
Monocot and dicot, leaves, cross sec.	<b>MZ-4003</b>
Geranium stem, C.S.	<b>MZ-3109</b>
Monocot and dicot, stem , cross sec.	<b>MZ-4002</b>
Hydra sperm gland, cross sec.	<b>MZ-1007</b>
Lily, leaf, cross sec.	<b>MZ-3144</b>
Sunflower, young stem, cross sec.	<b>MZ-3086</b>
Large intestine, cross sec. (mammal)	<b>MZ-2046</b>
Corn (mais), stem, longitudinal sect.	<b>MZ-3100</b>
Corn (mais), stem, cross sect.	<b>MZ-3099</b>
Corn(zea mays) root, C.S.	<b>MZ-3071</b>
Hydra, whole body	<b>MZ-1003</b>
Insect, leg for pollinating, whole body	<b>MZ-1073</b>
Insect, legs for walking, whole body	<b>MZ-1070</b>
Insect, legs for swimming, whole body	<b>MZ-1071</b>
Insect, legs for jumping, whole body	<b>MZ-1072</b>
Insect, legs for digging, whole body	<b>MZ-1069</b>
Lichen, sect.	<b>MZ-3008</b>
Yeast, whole body	<b>MZ-3007</b>
Lumbricus (earthworm), cross section	<b>MZ-1025</b>
Marchantia, female genital organ, longitudinal sec.	<b>MZ-3019</b>
Marchantia, male genital organ, longitudinal sec.	<b>MZ-3018</b>
Meiosis, cross section of lily anther at different phases	<b>MZ-4005</b>
Spleen sec. (mammal)	<b>MZ-2050</b>
Mitosis, onion tips, sec.	<b>MZ-3067</b>
Mitosis, horse mite's egg	<b>MZ-1023</b>
Monocot and dicot, roots , cross sec.	<b>MZ-4001</b>
House fly, whole body	<b>MZ-1064</b>
House fly, mouth parts, whole body	<b>MZ-1030</b>
Moss, antheridium, cross sec.	<b>MZ-3023</b>
Moss, whole body	<b>MZ-3021</b>
Moss, protonema, whole body	<b>MZ-3022</b>
Skeletal muscle, longitudinal and cross sections	<b>MZ-2025</b>
Insect's composed eye, sec.	<b>MZ-1042</b>
Hydra ovary, cross sect	<b>MZ-1008</b>
Lily ovary, cross sec.	<b>MZ-3173</b>

Pancreas (mammal)	<b>MZ-2049</b>
Paramecium W.M.	<b>MZ-1001</b>
Stomach wall, sec	<b>MZ-2038</b>
Frog skin C.S.	<b>MZ-1045</b>
Human skin section through hair follicle	<b>MZ-2080</b>
Human skin, sect. through sweat gland	<b>MZ-2079</b>
Penicillium, whole body	<b>MZ-3003</b>
Frog small intestine, cross sect.	<b>MZ-1047</b>
Small intestine, cross sec. (mammal)	<b>MZ-2041</b>
Pine tree leaf C.S.	<b>MZ-3037</b>
Pine tree, spherical female fruit, longitudinal sec.	<b>MZ-3043</b>
Pine tree, spherical male fruit, longitudinal sec.	<b>MZ-3042</b>
Pine tree, 1year old stem, cross sec.	<b>MZ-3038</b>
Pine tree, 10 years old stem, cross sec.	<b>MZ-3039</b>
Pine tree, pollen, whole body	<b>MZ-3044</b>
Lily pollen, whole body	<b>MZ-3165</b>
Lung sec. (mammal)	<b>MZ-2053</b>
Porphyra (sea lettuce), whole body	<b>MZ-3015</b>
Fern prothallus, young sporophyte, whole body	<b>MZ-3032</b>
Frog hearth sect.	<b>MZ-4060</b>
Frog liver section	<b>MZ-4057</b>
Frog testicle, sec.	<b>MZ-4054</b>
Buttercup, root, cross sec.	<b>MZ-3050</b>
Kidney, longitudinal sec. (mammal)	<b>MZ-2058</b>
Rhizopus nigricans (breadmold), whole body	<b>MZ-3002</b>
Human sperm, smear	<b>MZ-2065</b>
Spirogyra conjugation, whole body	<b>MZ-3013</b>
Frog blood smear	<b>MZ-2016</b>
Human blood smear	<b>MZ-2015</b>
Marchantia thallus, sec.	<b>MZ-3016</b>
Compact bone tissue	<b>MZ-2013</b>
Testicle of migratory locust, sec.	<b>MZ-1040</b>
Tilia ( linden tree), 1 year old stem, cross sec.	<b>MZ-3091</b>
Tilia (linden tree), 3 year old stem, cross sec.	<b>MZ-3093</b>
Three types of bacteria, smear	<b>MZ-1077</b>
Three types of leaves , cross sec.	<b>MZ-3136</b>
Tubellaria, injected intestinal tube, whole body	<b>MZ-4024</b>
Volvox, whole body	<b>MZ-3011</b>
Female mosquito, whole body	<b>MZ-1065</b>
Female mosquito, mouth parts, whole body	<b>MZ-1029</b>
Male mosquito, mouth parts, whole body	<b>MZ-1028</b>

**EMPTY PLASTIC CASES FOR SLIDES**

Plastic case for 10 slides	<b>MZ-6010</b>
Plastic case for 15 slides	<b>MZ-6015</b>
Plastic case for 25 slides	<b>MZ-6025</b>
Plastic case for 50 slides	<b>MZ-6050</b>
Plastic case for 100 slides	<b>MZ-6100</b>



## Bacteria and yeasts (12 slides) 15900

Tartar - saccharomyces cerevisiae (brewer's yeast) - coccobacillus - yoghurt bacteria - acetobacter - staphylobacillus - Hansen's bacillus (leprosy) - staphylococcus - streptobacillus (lactic bacillus) - bacilla - candida albicanis - candidiasis.

## Weeds (12 slides) 15901

Spirogyra - phytoplankton diatoms - brown seaweed ovary, c. s. - Posidonia leaf, c. s. - peacock feather, c. s. - laminar thallus c. s. - corallina officinalis - halopteris scoparia - nostoc - ulva, c. s. - codiaeum variegatum, cross. section. - rhizome of seaweed.

## Mushrooms, lichens, musks (12 slides) 15902

Bread mould - basidiomycet champignon mushroom- gasteromycete of truffle - ascomycetes - polyporaceae (bracket fungi) - fruit mould - Xantophyceae's lichen, t.s. - paramelia lichen, t.s. - Mushroom stem - Lichen apothecium- musk's sporangium - musk leaf

## Morphology of cells(12 slides) 15903

Silica cells (diatomeae) - stone cells (dissociated sclereids) - adipose cells (cut of coffee seed) - scale cells (vegetal hairs of ulive leaf) - secretory cells (fennel thallus) - fibrous cells (thrinax fibres) - spheric cells (equisetum spores) - concretioned cells (orange tree bark) - elongated cells (coconut flesh) - polygonal cells (Ceterach Officinatum exfoliated epidermis) - elliptical cells (Lilium pollen) - cylindrical cells (asphodelus, t.s.).

## Cell structure (12 slides) 15904

Tannins (carob thallus) - starch (corn seed by-products) - druse (lilium styles) - raphides (thallus, cat nail) - nuclei (mixed plants) - aleuron (seeds, wheat bran) - calcium crystals (onion endothelium) - proteins (seeds) - globoids (castor proteins) - chloroplasts (leaves of fig tree and vine) - potato flour(section of potato) - pelargonin (geranium petal).

## Vegetable histology 1 (12 slides) 15905

Tracheids of linden tree - collenchyma - lysigenous holes - sclerenchyma fibres- epidermis with styles - air pores - cork - xylem, t.s.- xylem, l. s. - marrow parenchyma - ringed vessels - chlorophyl parenchyma.

## Vegetable histology 2 (12 slides) 15906

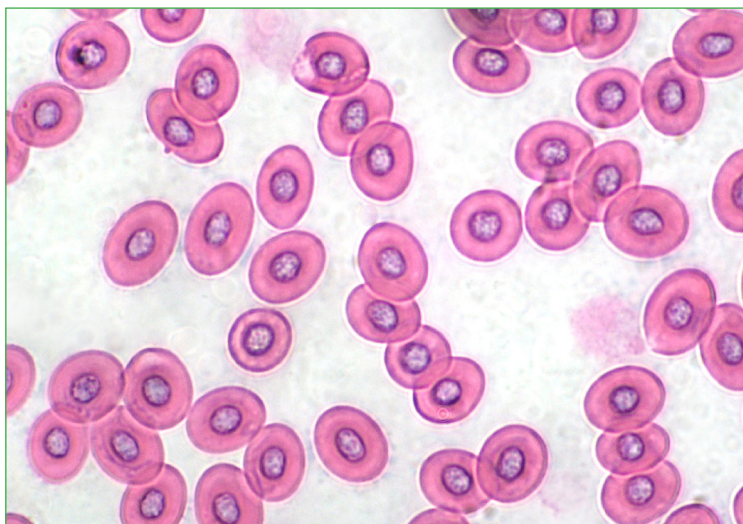
Cypress pollen - Equisetum thallus- Male pine fower - Monocotyledon roots - ulive leaf - Monocotyledon thallus - Female pine leaves - Dicotyledon thallus, secondary structure - petiole - pine fresh thallus - pine leaf - Monocotyledon's leaf.

## Vegetable histology 3 (12 slides) 15907

Dicotyledon roots - Dicotyledon thallus, prime secondary structure - stigma - rootstock - eucalyptus leaf - Dicotyledon leaf - Fern leaf - Primary dicotyledon root - ovary - flower - bud - style, t. s.

## Pollens and spores (12 slides) 15908

Gladiolus pollen - Polypody spores - Chanterelle spores - Corn pollen - Equisetum spores - pine pollen - passion flower pollen - Lycopodium spores - Coprinus mushroom spores - Mimosa pollen- fern spores - Platanus pollen.

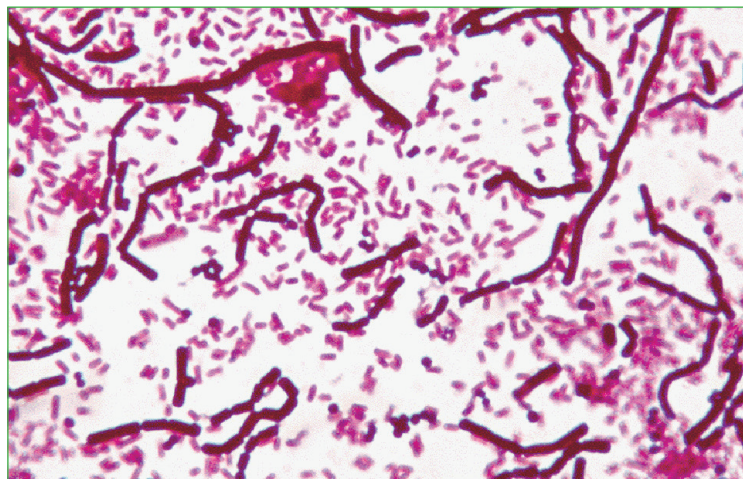


## Zoology (12 slides) 15909

Chromatophores - Copepods - bird feather - dog hair - cycloid scale - ctenoid scale - butterfly wing - hydroids- sponge section - nucleated blood - holothuroidea spicules - radula.

## Insects (12 slides) 15910

Fly wing -fly leg - bee head - fly head - winged ant wing - bee wing - ant head - mosquito head - butterfly wing - bee sting - diptera larva - insect windpipe (trachea)



## Parasitology (12 slides) 15911

Liver with parasites - Lung with parasites - triquina - tapeworm, t.s. - flea - birds' louse - Mite - zoocidium - Ascaris, t.s. - fasciola hepatica(liver fluke), t.s.- opalina - coenurus.

## Animal histology 1 (12 slides) 15912

Skeletal muscle - Smooth muscle - spongy bone - compact bone - diaphanous cartilage - elastic cartilage - mammal blood - adipose tissue (fat) - prismatic epithelium - sebaceous gland - multilayered epithelium - subjunctive released in the umbilical cord.

## Animal histology 2 (12 slides) 15913

Mammal tongue - tooth, t.s. - oesophagus - stomach - reticulum - omasum - abomasum - small intestine - large intestine - pancreas - liver - gall bladder.

## Animal histology 3 (12 slides) 15914

Nose cavity - windpipe - mammal lung -kidney - urethra - urinary bladder - testis - epididymis - ovary - uterine tube - uterus - udder.

## Animal histology 4 (12 slides) 15915

Mammal skin - hair, t.s.. - lymphatic ganglion - heart - artery - vein - marrow - cerebellum(little brain) - brain - adrenal glands- thymus gland -spleen.

## Petrography (10 slides) 15916

Granite - gabbro - gneiss - quartzite - sandstone - aragonite - trachyte - bauxite - syenite - basalt - mica schist - marble -fossil limestone - peridot - diabase - diorite

## General biology (25 slides) 15917

Skeletal muscle - small intestine - diaphanus cartilage - elastic cartilage - compact bone - mammal tongue - mammal stomach - lung - yoghurt bacteria - starch - iris ovary- raphides - dicotyledon thallus - stone cells - pollen - ascomycota - butterfly wing - fly leg - sponge spicule - hydroides - bird blood - mammal hair - ctenoid scale - bee wing - spider leg.

## Structure and morphology of cells (25 slides) 15918

Silica cells - adipose cells - spheric cells - elongated cells - elliptical cells - stone cells - scale cells - fibre cells - concretioned cells - cylindrical cells - polygonal cells - dotted cells - cork-like cells - druse - starch - nuclei - calcium crystals- globoids- tannins - raphes - proteins - aleurons - chloroplasts - pelargonin - potato flour.



**General zoology (25 slides)****15919**

Cromatophores - holothuroidea spicules - arachnid's leg - sea crustacean - copepods - winged ant wing - sponge, t. s. - mammal hair - bird blood - cycloid scale - wool fibres - head of mosquito - ctenoid scale - radula - hydroids - bird feather - diptera wing - diptera larva - fly leg - butterfly wing - head of ant - head of fly - bee wing - bee sting - insect windpipe.

**General animal histology 1 (25 slides)****15920**

Skeletal muscle - smooth muscle - compact bone - spongy bone - diaphanous cartilage - elastic cartilage - mammal tongue - large intestine - small intestine - oesophagus - omasum- reticulum- abomasum -liver - pancreas - gall bladder - bird tongue- frog tongue - nose cavity - windpipe (trachea) - mammal lung - mammal skin - bird lung - pelle di muranca - hair , t.s.

**General animal histology 2 (25 slides)****15921**

Mammal kidney - urethra - urinary bladder - uterus - uterine tube - testis - epididymis - udder - lymphatic ganglion - adrenal glands - spinal cord - brain - small brain - artery - vein - heart - blood - thymus gland - spleen- ovary - bird kidney - fish gonad - lung with parasites - fasciola hepatica(liver fluke), t.s. - oesophagus and windpipe of bird.

**Fishes, frogs and other amphibians (10 slides)****15600**

Dogfish (scyllum) vertebral column t.s. - Fresh water fish, region of gills t.s. - Fresh water fish, region of tails t.s. - Fish scales, various types w.m. - Tadpole frog, larva t.s. through body - Frog (Rana) blood smear - Frog (Rana) tongue t.s. - Frog (Rana) intestine t.s. - Frog (Rana) lung t.s. - Salamander skin, t.s. with poison glands.

**Lizard, snakes and bird (10 slides)****15601**

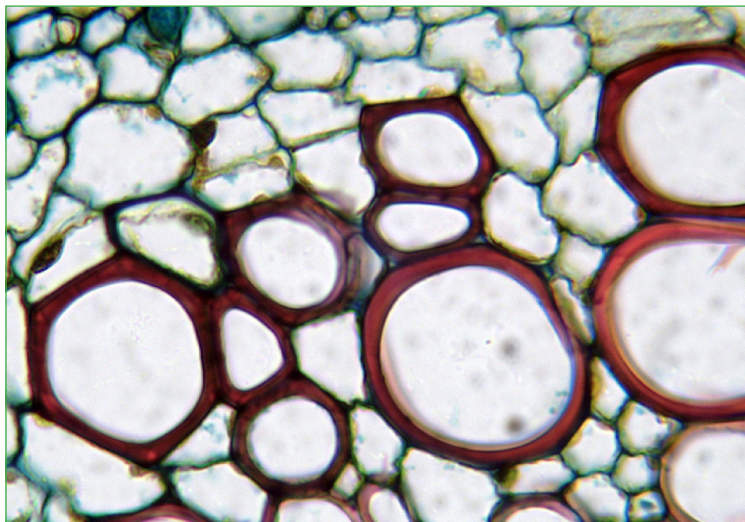
Lizard (Lacerta)wide surface lung t.s. - Lizard (Lacerta) kidney - Adder (Elaphe) muscles of snake t.s. - Adder (Elaphe) stomach with acid glands of snake - Goose (Anser) plume feather w.m. - Duck (Anas) gizzard with thicklining t.s. - Turkey (Meleagris) wing feather w.m. - Chicken (Gallus) cockscomb, secondary sexual characteristic t.s. - Chicken (Gallus) ovary t.s. - Chicken (Gallus) blood smear.

**Bacteria, simple organisms (10 slides)****15602**

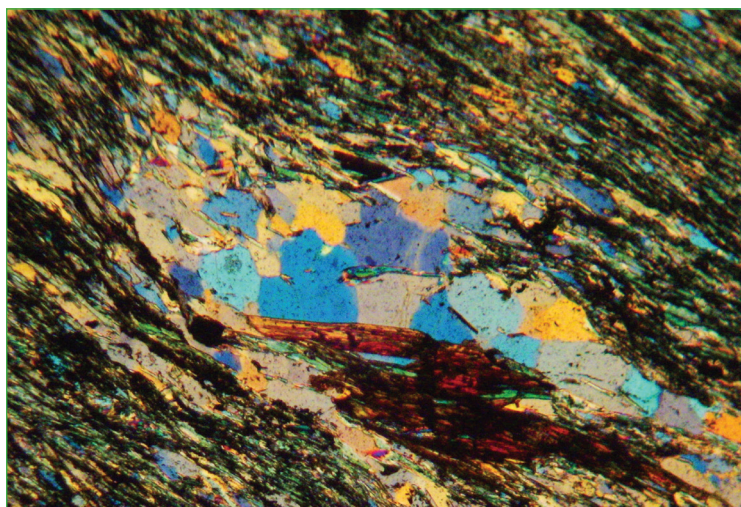
Hay bacilli (Bacillus subtilis) - Milk souring bacteria (Streptococcus lactis) - Putrefaction bacteria (Proteus vulgaris) - Intestinal bacteria (Escherichia coli) - Paratyphoid bacteria (Salmonella paratyphi) - Bacillary dysentery (Shigella dysenteriae) - Pus bacteria (Staphylococcus pyogenes) - Bacteria from human mouth - Bacteria from cheese - Bacteria from leaven.

**Plant reproduction and propagation (10 slides)****15604**

Bacteria rod-shaped bacilli in fission - Seaweed, Focus thallus t.s. - Cornsmut Ustilago spore w.m. - Pine (Pinus), male cone with pollen t.s. - Pine pollen grains with air bag w.m. - Chive, flower with anthers, ovaries t.s. - Lily anthers development of pollen t.s. - Tulip (Tulipa) t.s. ovary with ovules - Iris t.s. seed and embryo - Tomato (Solanum) young fruit t.s.

**Structure of a vegetable cell (10 slides)****15605**

Cells with crystals from cactus t.s. - Edelberry, Sambucus stem t.s. - Mullein, Verbascum branched leaf hairs - Glandular cells in rosemary leaf t.s. - Sunflower leaf with hairs t.s. - Water lily Nymphaea stem, stellate hairs. - Dead nettle Lamium stem t.s. - Potato cells with starch grains t.s. - Pollen grains, mixed species - Isolated vessels from plant stem.

**The world of a drop of water (10 slides)****15607**

Diatoms, many different forms - Euglena, green flagellate weed - Paramecium, ciliates from hay-infusion - Daphnia, water flea - Cyclops, a copepod w.m. - Desmids, mixed (Desmidiaceae) - Mixed plankton from fresh water - Hydra t.s. of the body - Planaria t.s. of body of a flatworm - Bacteria from putrid water.

**The human tissues 1 (10 slides)****15608**

Human blood smear with red and white cells - Human mouth, epithelial cells - Human striate muscle l.s. - Human cerebrum t.s. - Human tonsil with lymph nodules, t.s. - Human lung t.s. - Human skin l.s. - Human stomach t.s. - Human red bone marrow, blood cell in development - Human testis t.s.

**The human tissues 2 (10 slides)****15609**

Human skin, section t.s. of hairs - Human salivary gland t.s. - Human cerebellum t.s. - Bacteria from human intestine - Human spermatozoa, smear - Human heart muscle, t.s. and l.s. - Human bone t.s. - Human liver tissue t.s. - Human intestinal wall t.s. - Human kidney, t.s. of a cortical zone.

**Animal and human parasites (10 slides)****15610**

Tapeworm (Taenia) t.s. proglottids - Tapeworm (Taenia) eggs w.m. - Trichinella t.s. muscle with larvae - Trypanosoma in blood smear - Plasmodium, cause of malaria, in blood s.m. - Liver of rabbit, with coccidiosis t.s. - Big liver fluke (Fasciola) t.s. - Schistosoma t.s. of male and female - Hydatide cyst of Echinococcus t.s. - Roundworm of man and pig (Ascaris) t.s.

**Life in the ground (10 slides)****15612**

Soil bacteria - Hyphae of root fungi t.s. - Fruiting body of mushroom (Psalliota) - Horsetail Equisetum - Moss leaf, surface view w.m. - Needle of pine (Pinus) t.s. - Venation of a deciduous leaf - Decomposing leaf, formation of humus - Mite from forest soil w.m. - Earthworm (Lumbricus) t.s. midbody.

### **Set for science teaching (10 slides)** 15614

Leg of house fly, *Musca domestica* - Bird feather w.m. - Wing scales of butterfly - Human blood smear - Intestine of rabbit t.s. - Lung of cat t.s. - Mixed zoological and botanical plankton - Pollen grains of different plants - Foliate leaf with netted venation - Large cells, marrow of edelberry

### **Set for biology teaching 1 (10 slides)** 15615

Filamentous green alga of freshwater with chloroplasts - Mould from bread with mycelium and spore - Sunflower root t.s. - Privet, t.s. of leaf (*Ligustrum*) with palisade and spongy parenchyma - Tulip, t.s. of ovary with ovules - Paramecium ciliates - Earthworm t.s. through midbody - House fly, wing w.m. - Frog, blood smear - Chick, skin of a bird l.s. with feathers.

### **Set for biology teaching 2 (10 slides)** 15616

Bacteria from sour milk, smear - Moss, leaves t.s. with chloroplasts - Yew, young stems t.s. - Hyacinth seed t.s. - Euglena, green flagellate - Ascaris, intestine worm t.s. through midbody - Honey bee (*Apis*), antenna with smell organs w.m. - Carp (*Cyprinus*) t.s. of gills - Liver of rabbit t.s. - Skin of cat l.s. with glands and hairs.



### **Animal reproduction (10 slides)** 15624

Tapeworm of sheep, mature proglottid with eggs t.s. - Honey bee ovaries of queen t.s. - Fish, testis with spermatozoa t.s. - Sperm smear of bull - Testis of bull, spermatogenesis t.s. - Ovary of rabbit, ovogenesis t.s. - Fallopian tube of guinea pig t.s. - Uterus of pig, resting stage t.s. - Uterus of rat with embryo t.s. - Placenta of cat or pig t.s.

### **Cell reproduction (10 slides)** 15626

Mitotic stages in red bone marrow of a mammal - Mitotic stages in testis of mouse t.s. (meiosis) - Development of sea-urchin egg, cleavage stage - Growing egg in ovary of bird t.s. - Plant mitosis, l.s. of onion root tips - Plant mitosis, angular vision of onion root tips - Growing tissue in asparagus stem apex l.s. - Growing pine leaf tissue in shoot apex t.s. - Plant meiosis, t.s. young *Lilium* anthers - Mature pollen grains of *Lilium* w.m.

### **Human pathological tissues 1 (10 slides)** 15627

Tuberculosis of the lung with bacteria breeding grounds t.s. - Cirrhosis of liver with parenchyma isles and connective tissues t.s. - Leukemia of spleen with leukocytes and young cells t.s. - Sleeping disease, blood smear with protozoa - Inflammation of the lung, breeding grounds around blood vessels - Malaria, melanemia of spleen t.s. - Scar tissue of skin t.s. - *Eberthella typhi* (typhoid fever) - Chronic nephritis: inflamed renal tubules t.s. - Pus bacteria smear with cocci.

### **Human pathological tissues 2 (10 slides)** 15628

Miliary tuberculosis of liver - Anthracosis of lung - Malaria parasites in blood - Infarct of lung t.s. - Cancer of testis t.s. - Amyloid degeneration of liver - Influenza pneumonia - Struma of thyroid gland - Chronic inflammation of colon - Metastatic carcinoma of liver.

### **The cell and the animal tissues (25 slides)** 15629

Squamous epithelium of amphibian - Squamous stratified epithelium - Cuboidal Epithelium - Simple columnar epithelium - Pseudostratified columnar epithelium - Ciliated epithelium - Transitional epithelium - Fibrous connective tissue of a mouse's tail - Reticular connective tissue - Fat Connective tissue - Hyaline Cartilage - Elastic Cartilage - Fibrous Cartilage - Human bone tissue - Growing bone and joint cartilage of a fetus' finger - Fish Blood - Bird blood (sparrow) - Human blood - Striated muscle, dissociated with whole fibres, nuclei, fibrils and striations - Smooth involuntary muscle, dissociated - Cardiac muscle, dissociated with ramified cells, striations and intercalated discs - Muscle and tendon, lateral section - Nerve cells, spinal cord section, Golgi's method - Nerve, cross and lateral section, hematoxylin and eosin stain - Intercostal muscles' neuromuscular synapse, auric impregnation.

