

# SECTION 04 - MICROSCOPY

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## 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 they are endowed with, thanks to the use of low-consumption LED light sources.

They are ideal for an open air class; the kits are stored in two useful compartment-case and, therefore, they are easy to be carried around.

### 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.



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.



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 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.



**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-61	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-62	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-63	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-65	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-66	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-67	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-69	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**

- |  |   |                                   |
|--|---|-----------------------------------|
| <b>M-001</b> Huygens 5x eyepiece               | <b>M-136</b> Achromatic objective 100x/1.25 (oil)                           | <b>M-069</b> Solar charger        |
| <b>M-002.2</b> WF10x/18 eyepiece               | <b>M-040</b> Attachable mechanical stage (only for B-61)                    | <b>15008</b> Immersion oil, 10ml  |
| <b>M-003.2</b> WF15x/12 eyepiece               | <b>M-155.2</b> Polarising set (filters only)                                | <b>15009</b> Immersion oil, 100ml |
| <b>M-004.2</b> WF10x/18 micrometric eyepiece   | <b>M-114</b> 0.5x C-Mount projection lens                                   | <b>15104</b> Cleaning kit         |
| <b>M-008.2</b> WF10x/18 eyepiece, with pointer | <b>M-115</b> 0.35x C-Mount projection lens                                  |                                   |
| <b>M-162</b> WF20x/10 eyepiece                 | <b>M-118</b> 0.75x C-Mount projection lens                                  |                                   |
| <b>M-131</b> Achromatic objective 4x/0.10      | <b>M-970</b> Plane-concave mirror, with base (only for B-61)                |                                   |
| <b>M-132</b> Achromatic objective 10x/0.25     | <b>M-005</b> Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100) |                                   |
| <b>M-133</b> Achromatic objective 20x/0.40     | <b>DC-001</b> Plastic dust cover, small, 340(l)x400(h) mm                   |                                   |
| <b>M-134</b> Achromatic objective 40x/0.65     |   |                                   |
| <b>M-135</b> Achromatic objective 60x/0.85     |   |                                   |

**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 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.  
 Available in the following configurations:  
**M-100FX-EU / M-100FX-UK / M-100FX-US**


**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.  
 Available in the following configurations:  
**M-100FLED-EU / M-100FLED-UK**


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

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-20R	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-20CR	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
M-100FX	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
M-100FLed	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

## 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.

### 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.

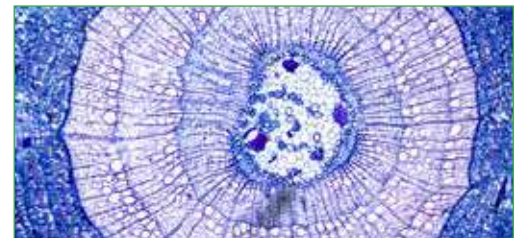
**B-150D models:** N.A. 1.2, pre-centered, adjustable height with iris diaphragm.

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

Color temperature: 6,300 K.



*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 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**

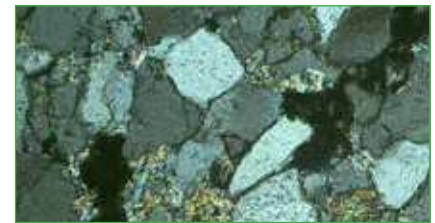
Incomparable Comfort With The Exclusive Automatic Light Control (ALC)

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).

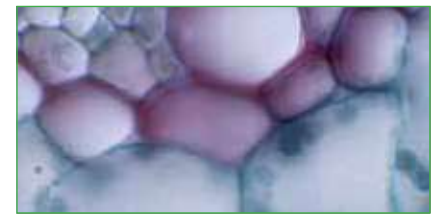


*Polarized light observation of Quartzite with B-150P and 10x objective*



**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 is your choice as it comes with a rechargeable battery. 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-165</b> N-PLAN objective 10x/0.25 (only for R-PL, MRPL, BRPL)                | <b>M-978</b> Yellow filter, 32mm diameter                                   |
| <b>M-002.1</b> WF10x/18 eyepiece, high eyepoint                   | <b>M-166</b> N-PLAN objective 20x/0.40 (only for R-PL, MRPL, BRPL)                | <b>M-988</b> Frosted glass filter, 32mm diameter                            |
| <b>M-003</b> WF16x/12 eyepiece                                    | <b>M-167</b> N-PLAN objective 40x/0.65 (only for R-PL, MRPL, BRPL)                | <b>M-155</b> Polarisng set (filters only)                                   |
| <b>M-004</b> WF10x/18 micrometric eyepiece, high eyepoint         | <b>M-168</b> N-PLAN objective 60x/0.85 (only for R-PL, MRPL, BRPL)                | <b>M-114</b> 0.5x C-Mount projection lens                                   |
| <b>M-008</b> WF10x/18 eyepiece, high eyepoint, with pointer       | <b>M-169</b> N-PLAN objective 100x/1.25 (oil) (only for R-PL, MRPL, BRPL)         | <b>M-115</b> 0.35x C-Mount projection lens                                  |
| <b>M-162</b> WF20x/10 eyepiece                                    | <b>M-040</b> Attachable mechanical stage (only for B-151, B-151ALC and B-151R-PL) | <b>M-118</b> 0.75x C-Mount projection lens                                  |
| <b>M-137</b> HC (high contrast) objective 4x/0.10                 | <b>M-974</b> Blue filter, 32mm diameter   | <b>M-972</b> Plane-concave mirror, with base                                |
| <b>M-138</b> HC (high contrast) objective 10x/0.25                | <b>M-976</b> Green filter, 32mm diameter  | <b>M-005</b> Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100) |
| <b>M-139</b> HC (high contrast) objective 20x/0.40                |   | <b>M-069</b> Solar charger  |
| <b>M-141</b> HC (high contrast) objective 40x/0.65                |   | <b>DC-002</b> Plastic dust cover, medium, 490(l)x490(h) mm                  |
| <b>M-142</b> HC (high contrast) objective 60x/0.85                |   | <b>15104</b> Cleaning kit   |
| <b>M-143</b> HC (high contrast) objective 100x/1.25 (oil)         |   | <b>15008</b> Immersion oil, 10ml  |
| <b>M-164</b> N-PLAN objective 4x/0.10 (only for R-PL, MRPL, BRPL) |   | <b>15009</b> Immersion oil, 100ml   |

**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 automatic brightness control
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 automatic brightness control
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 automatic brightness control
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 automatic brightness control
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 automatic brightness control

**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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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, Li-Ion 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-190TB 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%!

### B-190 Series - Technical features

**Observation mode:** brightfield.

**Heads:**

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

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

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

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

**Interpupillary distance:**

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

**B-193 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.

**Obiettivi:** HC - High Contrast (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



**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.

**Binocular microscope**

**B-192**

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



B-192

**Trinocular microscope**

**B-193**

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.



B-193

**Trinocular microscope**

**B-190TB**

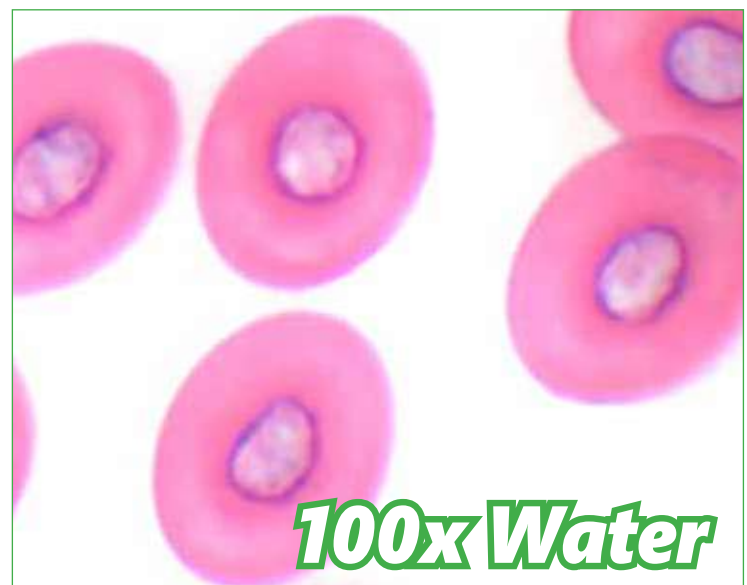
3 MP Built-in camera and 10.1" Windows tablet PC up to 1000x total magnification, mechanical stage and exclusive X-LED<sup>2</sup> for unmatched performance for powerful and uniform illumination.



B-190TB

**B-190 Series - Comparison chart**

Model	Head	Eyepieces	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
B-191	Monocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 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-191s	Monocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 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-192	Binocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 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-192s	Binocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 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-193	Trinocular, 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 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-190TB	Binocular, digital 360° rotating, 30° inclined.	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 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-190TB**

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-190TB includes a 3 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.*

**Accessories for B-190 Series**

<b>M-001</b>	Huygens 5x eyepiece	<b>M-173</b>	Photo adapter for APS-C and full frame reflex cameras (trino head)(only for B-193)
<b>M-002.1</b>	WF10x/18 eyepiece, high eyepoint	<b>M-114</b>	0.5x C-Mount projection lens
<b>M-003</b>	WF16x/12 eyepiece	<b>M-115</b>	0.35x C-Mount projection lens
<b>M-004</b>	WF10x/18 micrometric eyepiece, high eyepoint	<b>M-118</b>	0.75x C-Mount projection lens
<b>M-008</b>	WF10x/18 eyepiece, high eyepoint, with pointer	<b>M-971</b>	Plane-concave mirror, with base
<b>M-162</b>	WF20x/10 eyepiece	<b>DC-002</b>	Plastic dust cover, medium, 490(l)x490(h) mm (except for B-190TB)
<b>M-137</b>	HC (high contrast) objective 4x/0.10	<b>DC-003</b>	TNT dust cover, medium, 600(l)x550(h) mm (only for B-190TB)
<b>M-138</b>	HC (high contrast) objective 10x/0.25	<b>M-069</b>	Solar charger
<b>M-139</b>	HC (high contrast) objective 20x/0.40	<b>15008</b>	Immersion oil, 10ml
<b>M-141</b>	HC (high contrast) objective 40x/0.65	<b>15009</b>	Immersion oil, 100ml
<b>M-142</b>	HC (high contrast) objective 60x/0.85	<b>M-005</b>	Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
<b>M-143</b>	HC (high contrast) objective 100x/1.25 (oil)	<b>15104</b>	Cleaning kit
<b>M-174</b>	Polarising set (filters only)	<b>VP-190</b>	IQ/OQ/PQ manual for B-190 series
<b>M-974</b>	Blue filter, 32 mm diameter	<b>VP-TB</b>	IQ/OQ/PQ manual for TB series
<b>M-976</b>	Green filter, 32 mm diameter	<b>TB-KBD1</b>	Keyboard for tablet
<b>M-978</b>	Yellow filter, 32 mm diameter		
<b>M-988</b>	Frosted glass filter, 32 mm diameter		



## 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

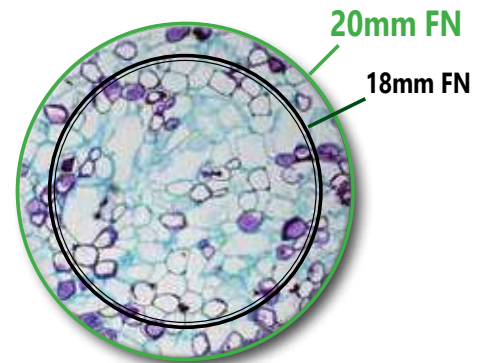
This new and revolutionary objective is something never seen before! Used with oil, it ensures the best achievable performance in terms of image resolution; with water, you get good quality and unparalleled comfort, eliminating all the tedious cleaning tasks typical of oil.

### 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.



Field view di 20 mm

### 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 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.

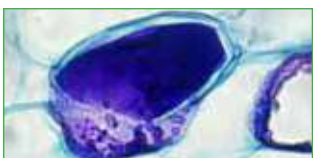
**Condenser:** N.A 1.25, centerable, adjustable height.

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

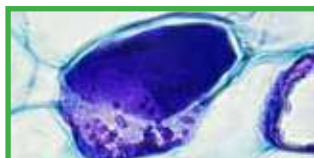


Trinocular microscope B-293

### 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-292	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-292PLi	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-293	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-293PLi	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-290TB	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**

<b>M-001</b> Huygens 5x eyepiece	<b>M-175</b> Rotating stage for polarising set (for 150x139mm rackless stage)	(except for B-290TB)
<b>M-008.1</b> WF10x/20 eyepiece, high eyepoint, with pointer, rubber cup	<b>M-174</b> Polarising set (filters only)	<b>DC-003</b> TNT dust cover, medium, 600(l)x550(h) mm (only for B-290TB)
<b>M-160</b> EW10x/20 eyepiece, high eyepoint, with rubber cup	<b>M-184</b> Darkfield stop for condenser	<b>M-005</b> Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
<b>M-161</b> EW15x/16 eyepiece, with rubber cup	<b>M-975</b> Blue filter, 45mm diameter	<b>M-069</b> Solar charger
<b>M-162</b> WF20x/10 eyepiece	<b>M-971</b> Plane-concave mirror, with base	<b>M-1380</b> Centering telescope, 23mm diameter (except for B-292, B-293 and B-290TB)
<b>M-163</b> EW10x/20 eyepiece, high eyepoint, with micrometric scale (10mm/100um) & rubber cup	<b>M-977</b> Green filter, 45mm diameter	<b>VP-290</b> IQ/OQ/PQ manual for B-290 series
<b>M-144</b> IOS N-PLAN objective 4x/0.10	<b>M-979</b> Yellow filter, 45mm diameter	<b>VP-TB</b> IQ/OQ/PQ manual for TB series
<b>M-145</b> IOS N-PLAN objective 10x/0.25	<b>M-989</b> Frosted glass filter, 45mm diameter	<b>M-666.290-EU</b> Applicable heating stage (for 150x139mm rackless stage), EU
<b>M-146</b> IOS N-PLAN objective 20x/0.40	<b>M-1124.1</b> Brightfield condenser (with phase slider slot) (except for B-292, B-293 and B-290TB)	<b>M-666.290-UK</b> Applicable heating stage (for 150x139mm rackless stage), UK
<b>M-147</b> IOS N-PLAN objective 40x/0.65	<b>M-1124.NO</b> Phase contrast condenser with insert slide 10x/20x-40x (except for B-292, B-293 and B-290TB)	<b>M-666.290-US</b> Applicable heating stage (for 150x139mm rackless stage), US
<b>M-148</b> IOS N-PLAN objective 100x/1.25 (oil)	<b>M-114</b> 0.5x C-Mount projection lens	<b>M-666.290-SW</b> Applicable heating stage (for 150x139mm rackless stage), CH
<b>M-149</b> IOS N-PLAN objective 60x/0.80	<b>M-115</b> 0.35x C-Mount projection lens	<b>TB-KBD1</b> Keyboard for tablet
<b>M-164</b> N-PLAN objective 4x/0.10	<b>M-118</b> 0.75x C-Mount projection lens	
<b>M-165</b> N-PLAN objective 10x/0.25	<b>M-173</b> Photo adapter for APS-C and full frame reflex cameras (trino head)	
<b>M-166</b> N-PLAN objective 20x/0.40	<b>15104</b> Cleaning kit	
<b>M-167</b> N-PLAN objective 40x/0.65	<b>15008</b> Immersion oil, 10ml	
<b>M-168</b> N-PLAN objective 60x/0.85	<b>15009</b> Immersion oil, 100ml	
<b>M-169</b> N-PLAN objective 100x/1.25 (oil)	<b>DC-002</b> Plastic dust cover, medium, 490(l)x490(h) mm	
<b>M-634.1</b> IOS W-PLAN objective 50x/0.95 (oil)		
<b>M-1120.N</b> IOS W-PLAN PH objective 10x/0.25		
<b>M-1121.N</b> IOS W-PLAN PH objective 20x/0.40		
<b>M-1122.N</b> IOS W-PLAN PH objective 40x/0.65		

## 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, from MS-2 to ST-50LED, 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 (except for monocular MS-2 model).  
45° inclined (except for STX: vertical head).  
**SFX-51, SFX-52 and MS-2:** 360° rotating heads.

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

**Dioptric adjustment:** ST-30FX and ST-50Led on the left eyepiece.

**All SFX models:** on both eyepieces.

**MS-2 and STX:** without dioptric adjustment.

**Eyepieces:** MS-2 and STX: WF 10x/16 mm. All other models: WF 10x/20 mm.

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

**Stand:**

**SFX-31, SFX-32, MS-2, ST-30FX and STX:** Pillar stand with focus.

**SFX-33, SFX-34, SFX-51 and SFX-52:** 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 e SFX-32:**

incident: 1W LED, transmitted: 1W LED, dial brightness control, rechargeable batteries.

**SFX-33, SFX-34, SFX-51, SFX-52, SFX-91 e SFX-91D:**

Incident: 1W LED, transmitted: 1W LED, dial brightness control, rechargeable batteries.

**MS-2:**

Without illumination.

**STX:**

incident: 0.1W LED, powered by 2 AA batteries (not included).

**ST-30FX:**

incident: 1W LED, transmitted: 1W LED.

**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 batteries for up to 8 hours (at medium intensity) of outdoor use.

### Serie SFX/STEREO - Accessori opzionali

#### ACCESSORIES FOR STX, MS-1 AND MS-2

- ST-015 Glass object-plate, 60mm diameter (only for MS-2)
- DC-001 Plastic dust cover, small, 340(l)x400(h) mm
- M-899 Pen illuminator (only for MS-1)
- 15104 Cleaning kit

#### 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-014 Glass object-plate, 95mm diameter (only for ST-30FX)
- ST-015 Glass object-plate, 60mm diameter (except for ST-30FX & ST-50Led)
- ST-011 White/black object-plate, 60mm diameter (except for ST-30FX & ST-50Led)
- ST-012 White/black object-plate, 95mm diameter (only for ST-30FX)
- 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
- ST-041 Sample clip (only for ST-30FX)



**Monocular microscope MS-2**

Entry-level monocular stereomicroscope with fixed objective (2x) that can be combined to external illuminators, in case some light is required.



MS-2

**Binocular microscope SFX-32**

Binocular stereomicroscope equipped with turnable objective (1x-3x), pillar stand, and incredibly bright and uniform illumination (transmitted and incident) with rechargeable batteries.



SFX-32

**Binocular microscope SFX-34**

Binocular stereomicroscope equipped with turnable objective (1x-3x), fixed arm with handle, and incredibly bright and uniform illumination (transmitted and incident), settable through the exclusive touch control. Powered by rechargeable batteries.



SFX-34

**Binocular microscope SFX-52**

Binocular stereomicroscope equipped with turnable objective (1x-3x), 360° rotating head, fixed arm with handle, and incredibly bright and uniform illumination (transmitted and incident), settable through the exclusive touch control. Powered by rechargeable batteries.



SFX-52

**Binocular microscope SFX-91D**

Digital binocular stereomicroscope equipped with turnable objective with 3 magnifications (1x-2x-4x), precision fixed arm with handle, and incredibly bright and uniform illumination (transmitted and incident), settable through the exclusive touch control. Powered by rechargeable batteries.



SFX-91D

**Binocular microscope ST-30FX**

Binocular stereomicroscope equipped with turnable objective (2x-4x), pillar stand, and incredibly bright and uniform illumination (transmitted and incident). Available in the following configurations: **ST-30FX-EU / ST-30FX-UK / ST-30FX-US**



ST-30FX

**SFX/STEREO Series - Comparison chart**

Model	Head	Eyepieces	Objective	Working Distance	Stand	Illumination
MS-2	Monocular, 45° inclined, 360° rotating	WF 10x/16	2x fixed	57 mm	Pillar with focus	Without illumination
STX	Binocular, vertical, fixed	WF 10x/16	2x fixed	67 mm	Pillar with focus	Incident: 0.1 W LED Powered by 2 AA batteries (not included)
SFX-31	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
SFX-32	Binocular, 45° inclined, fixed	WF 10x/20	1x – 3x selectable	57 mm	Pillar with focus	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
SFX-33	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
SFX-34	Binocular, 45° inclined, fixed	WF 10x/20	1x – 3x selectable	57 mm	Fixed with focus and handle	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
SFX-51	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
SFX-52	Binocular, 45° inclined, 360° rotating	WF 10x/20	1x – 3x selectable	76 mm	Fixed with focus and handle	Incident: 1 W LED Transmitted: 1 W LED Touch brightness control, rechargeable batteries
SFX-91	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
SFX-91D	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
ST-30FX	Binocular, 45° inclined, fixed	WF 10x/20	2x – 4x selectable	57 mm	Pillar with focus	Incident: 1 W LED Transmitted: 1 W LED
ST-50Led	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.

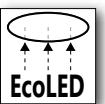
**Working distance** 100 mm.

**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 (biological & stereomicroscopes) (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)	SZ-EXT	Spacer for negative additional lenses (only for SLX-2 & SLX-3)
ST-091	Additional lens 0.75x (w.d. 105mm) (only for SLX-2 & SLX-3)	DC-002	Plastic dust cover, medium, 490(l)x490(h) mm
ST-086.1	Additional lens 1.5x (w.d. 45mm) with compensating disc (only for SLX-2 & SLX-3)	15104	Cleaning kit
ST-100.1	Hand moving stage, 100mm diameter	M-005	Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
ST-110.1	Moving stage, coaxial knobs, 100mm diameter	ST-092	Protective glass for stereohead
ST-111.1	Moving stage, micrometric screws, 100mm diameter	VP-SLX	IQ/OQ/PQ manual for SLX series
ST-040.1	Darkfield condenser, 100mm diameter	ST-041	Sample clip
ST-088.1	Polarising set (filters and rotating stage), 100mm diameter	ST-042	White/black object-plate, 100mm diameter
M-173	Photo adapter for APS-C and full frame reflex cameras (trino head) (only for SLX-3)	ST-043	Glass object-plate, 100mm diameter
M-699	Universal adapter (only for SLX-3)	ST-666.1-EU	Applicable heating stage (stereomicroscopes, 100mm diameter), EU
ST-090	0.35x focusable C-Mount adapter (stereomicroscopes) (only for SLX-3)	ST-666.1-UK	Applicable heating stage (stereomicroscopes, 100mm diameter), UK
ST-090.1	0.5x focusable C-Mount adapter (stereomicroscopes) (only for SLX-3)	ST-666.1-US	Applicable heating stage (stereomicroscopes, 100mm diameter), US
ST-090.2	0.65x focusable C-Mount adapter (stereomicroscopes) (only for SLX-3)	ST-666.1-SW	Applicable heating stage (stereomicroscopes, 100mm diameter), CH



**Tablet with integrated camera - TB Series**

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.

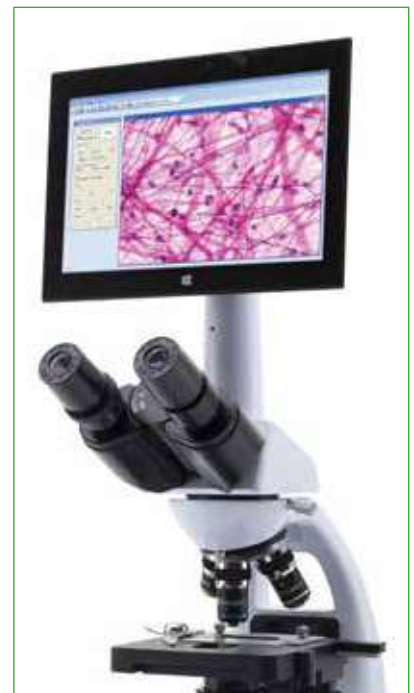


Keyboard code **TB-KD1** sold separately



**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, keyboard with panel and touch pen.

**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-B3	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 2.0
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 $\mu\text{m}$	3.2 x 3.2 $\mu\text{m}$	2.2 x 2.2 $\mu\text{m}$	1.67 x 1.67 $\mu\text{m}$
Frame rate full resolution	15 fps (1280 x 1024)	12 fps (2048 x 1536)	7 fps (2592 x 1944)	3.3 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 (1280 x 960); 90fps (640 x 480)	11 fps (1792 x 1374); 38 fps (896 x 684)
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
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 msec - 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**

C-HE

HDMI camera for easy operation, no compromises in quality.

- No installation of software required when used in HDMI mode.
- HDMI (720p) camera, for TV live view.
- Extremely reliable color fidelity.
- Lightweight cameras, to be used even on the smallest and lightest microscopes.
- SD card enables image and video capturing.
- Built-in function buttons for HDMI camera control.

**720p HD high-speed microscope camera with Aptina CMOS sensor: intuitive, entry-level.**



C-HE

**HDMI Cameras - H Series**

C-HP

C-mount connection, eyepiece adapter available.

- No installation of software required when used in HDMI mode.
- HDMI (1080p) and USB camera, for TV live view and PC use.
- Reliable color fidelity.
- Highly recommended for wide range of applications.
- SD card enables image and video capturing.
- External mouse (included) for HDMI camera control.

**Professional 1080p FULL HD high-speed microscope camera with measurement functions for premium performance.**



C-HP

**CAMERA Technical specifications**

	C-HE	C-HP
Video resolution (USB output)	-	1920 x 1080 pixel
Video resolution (HDMI output)	HD 720p	Full HD 1080p
Digital camera resolution	2 MP (1280 x 720)	2 MP (1920 x 1080)
Signal output	HDMI	HDMI
Sensor Size	1/2.8"	1/1.9"
Sensor technology	CMOS	CMOS
Sensor type	APTINA	SONY
Image format	16/9	16/9
Pixel size	2.8 x 2.8 µm	3.75 x 3.75 µm
Frame rate (HDMI)	30 fps (1280 x 720 HDMI); 30 fps (1920 x 1080 Capture)	60 fps (1920 x 1080) - HDMI; 26fps (1920 x 1080) - USB
Sensitivity	510 mV at 1/30sec	1120 mV at 1/30sec
Dark Signal	0.15mV at 1/30sec	0.15mV at 1/30sec
Exposure Time	0.06 msec - 1900 msec	0.34 msec - 4 sec
Binning	1x1	1x1
IR filter	380-650 nm (IR-cut filter)	380-650 nm (IR-cut filter)
Camera power	DC 12V	DC 12V/1A
C-mount	YES	YES
White balance	Auto	Auto / Manual
Gain control	Manual	Auto / Manual
Exposure control	Auto / Manual	Auto / Manual



*World-class viewing experience for crystal-clear videos and image.*

Accessories included: C-HE: 2 m HDMI cable, 16GB SD card, wireless mouse, power supply.  
C-HP: Calibration slide, 1.8 m USB cable, 2 m HDMI cable, 16GB SD card, wireless mouse, power supply



**WiFi Cameras - WF Series**

Camera with remote WiFi connection, ideal for teaching purposes and discussion groups. Connection for both trinocular C-mount ports and eyepiece tubes.

WiFi & USB camera.

5 MP resolution on USB mode and 2 MP resolution on WiFi mode.

Ideal for educational applications.

Lightweight cameras, to be used even on the smallest and lightest microscopes.

Direct connection via browser to share the specimen view (router is not needed).

Unlimited users connectable (average speed depending on connected users).

Supported by any device (PC, tablet or smartphone) with any type of browser.

Image and video capturing function when used in WiFi mode.

Includes the user-friendly and intuitive Optika Vision Lite software (USB mode).

**Technical specifications**

	OPTIKAM WiFi / 4083.WiFi
PC camera resolution	5 MP
WiFi camera resolution	2 MP
Signal output	USB 2.0, WiFi
Sensor Size	1\2.5"
Sensor technology	CMOS
Image format	4\3
Full Image size	2592 x 1944
USB Frame rate Full resolution	3 frames/sec: 2592 x 1944
USB Frame rate other resolutions	11 frames/sec: 640 x 480, 8 frames/sec: 1024 x 768
WiFi Frame rate Low resolution	2 frames/sec: 640 x 480 with 10 users
WiFi Frame rate other resolutions	1 frames/sec: 1024 x 768 with 10 users, 1 frames/3sec: 1600 x 1200 with 10 users
WiFi Speed	802.11 n 150 Mbps
WiFi Antenna	2.4GHz 5DB
Max Exposure time	Automatic
External camera power	5 V 2000mA
White Balance	Auto / Man
Gain Control	Auto / Man
Back light control	Auto / Man
Exposure control	Auto / Man
C-Mount connection	YES
CS-Mount connection	YES, ready

Accessories included: C-mount projection lens, 30 mm / 30.5 mm ring adapters, calibration slide, 1.8 m USB cable.



*USB and WiFi camera in once.  
No router needed!*

**Educam Cameras**

EDUCAM - Multimedia cameras to meet various requirements in the educational field.

Direct connection to TV screen and monitor.

Versatile and flexible, yet sturdy and stable at the same time: can be used as overhead projector, for the projection of drawings, as a camera for teleconferences, assemblies, meetings or as a camera for filming.

Up to 90x magnifying power for any specimen and object. 8mm objective lens enables focus from 0,76 cm, up to an infinite distance.

Extremely sensitive microphone to record voices/sounds (Multimedia models only).

All models are equipped with two adapters for video-microscopy (for biological and stereo microscopes).

**VC-05** - Simple eyepiece camera with CCD sensor, 420 TV Lines (PAL)

<b>Educam "Multimedia"</b>	<b>4083</b>
<b>Educam "Multimedia Pro"</b>	<b>4083.1</b>
<b>Educam "Student"</b>	<b>4083.2</b>
<b>Educam "Student Pro"</b>	<b>4083.3</b>
<b>Educam "USB"</b>	<b>4083.4</b>
<b>Educam "Microscopy"</b>	<b>4083.5</b>
<b>Eyepiece camera with CCD sensor</b>	<b>VC-05</b>
<b>OPTIKAM C-E2</b>	<b>C-E2</b>



MIC- 4083.5



VC-05



4083 / 4083.1 / 4083.2 / 4083.3



USB - 4083.4

	MULTIMEDIA / 4083	MULTIMEDIA PRO / 4083.1	STUDENT / 4083.2	STUDENT PRO / 4083.3
Digital camera resolution	NO	NO	NO	NO
Analog camera resolution	PAL 582 x 420	PAL 582 x 420	PAL 582 x 420	PAL 582 x 420
Signal output	PAL	PAL	PAL	PAL
Audio Signal	Analog	Analog	NO	NO
Sensor Size	1/3"	1/3"	1/3"	1/3"
Sensor technology	CCD	CCD	CCD	CCD
Image format	4/3	4/3	4/3	4/3
Full Image size	-	-	-	-
Frame rate full resolution	50 frames\sec (analog mode)	50 frames\sec (analog mode)	50 frames\sec (analog mode)	50 frames\sec (analog mode)
Max Exposure time	-	-	-	-
ON board Memory	NO	NO	NO	NO
External Memory Card	NO	NO	NO	NO
External camera power	15V DC power supply	15V DC power supply	12V DC power supply	12V DC power supply
White Balance	Auto	Auto	Auto	Auto
Gain Control	Auto	Auto	Auto	Auto
Back light control	Auto	Auto	Auto	Auto
Exposure control	Auto	Auto	Auto	Auto
C-Mount connection	YES	YES	YES	YES
CS-Mount connection	NO	NO	NO	NO
Arm length	50 cm	65 cm	50 cm	65 cm
8mm objective	YES	YES	YES	YES

Accessories included: All models: SCART for TV plug, 23mm eyepiece tube adapter and 30mm ring adapter for microscopes.

VC-05: 23mm to 30mm or 30.5mm ring adapters for microscopes, SCART for TV plug. OPTIKAM C-E2: 30 mm and 30.5 mm ring adapters for built-in 23mm eyepiece adapter, USB cable.

**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.

**C-E2**

USB / 4083.4	MIC / 4083.5	VC-05	OPTIKAM C-E2
0.3 MP	NO	NO	2 MP
PAL 582 x 420	PAL 582 x 420	PAL 582 x 420	NO
PAL , USB2.0	PAL	PAL	USB 2.0
Analog	NO	NO	NO
1\3"	1\3"	1\3"	1\3.2"
CCD	CCD	CCD	CMOS
4\3	4\3	4\3	4\3
640 x 480	-	-	1600 x 1200
50 frames\sec (analog mode), 25 frames\sec (digital mode)	50 frames\sec (analog mode)	50 frames\sec (analog mode)	5 frames\sec (1600x1200) / 7,5 frames\sec (1280x1024) / 22 frames\sec (640x480)
Auto	-	-	Auto
NO	NO	NO	NO
NO	NO	NO	NO
15V DC power supply	12V DC power supply	12V DC power supply	PC USB
Auto	Auto	Auto	Auto
Auto	Auto	Auto	Auto
Auto	Auto	Auto	Auto
Auto	Auto	Auto	Auto
YES	YES	NO	NO
NO	NO	NO	NO
65 cm	-	-	-
YES	YES	NO	NO



**MICROSCOPE SLIDES**

Pack of 50 object-holder slides.	V685
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 scalpel. Stainless steel.	F361
Potbellied with 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
Metylene 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 megaloccephala)
7. Female nematode, cross section (ascaris megaloccephala)
8. Egg mitosis of a horse's nematode (ascaris megaloccephala)
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



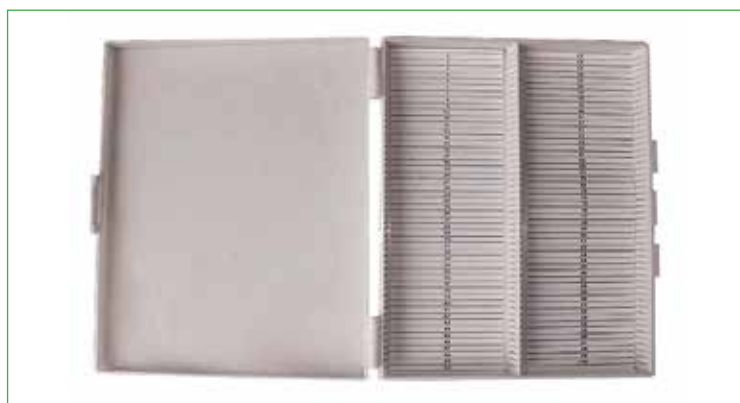
**PREPARED SLIDES - SINGLE SLIDE**

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 (Ameba or other)	<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, whole body	<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, whole body	<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, cross sect.	<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 (mais), root, cross sect.	<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, whole body	<b>MZ-1001</b>
Stomach wall, sec	<b>MZ-2038</b>
Frog skin, cross section	<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, cross sec.	<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**

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

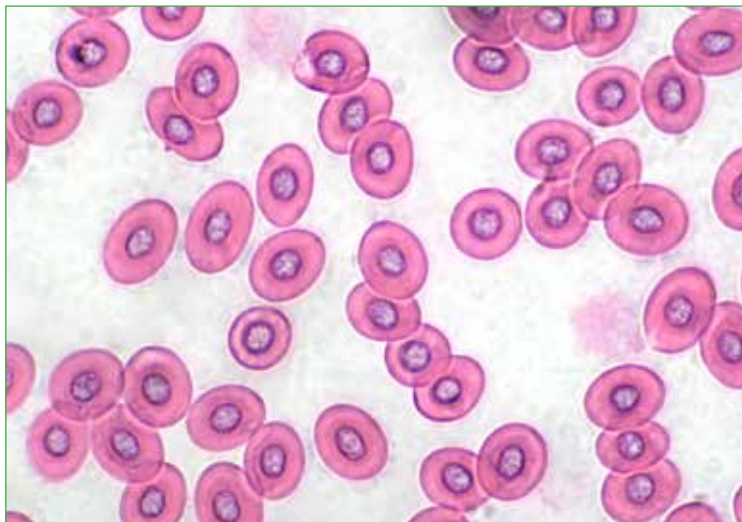
Cypress pollen - Equisetum thallus- Male pine fower - Monocotyledon roots - ulive leaf - Monocotyledon thallus - Female pine leaves - Dicotyledon thallus, secondary structure - petiole - pine fresh thallus - pine leaf - Monocotyledon's leaf.

**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.

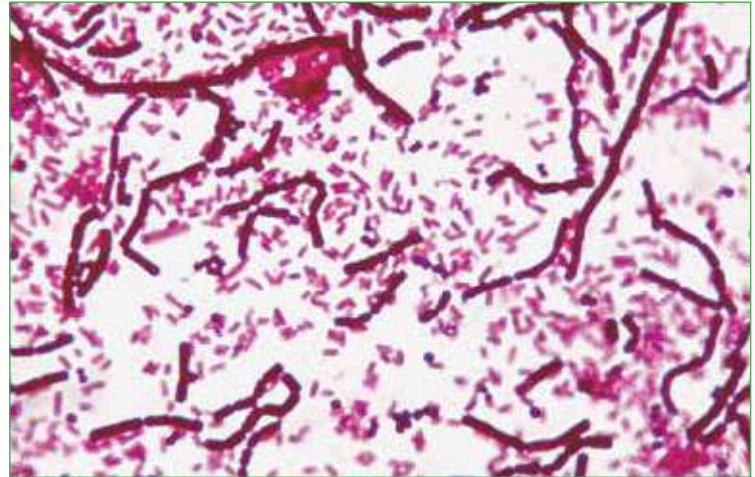


**Zoology (12 slides) 15909**

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**

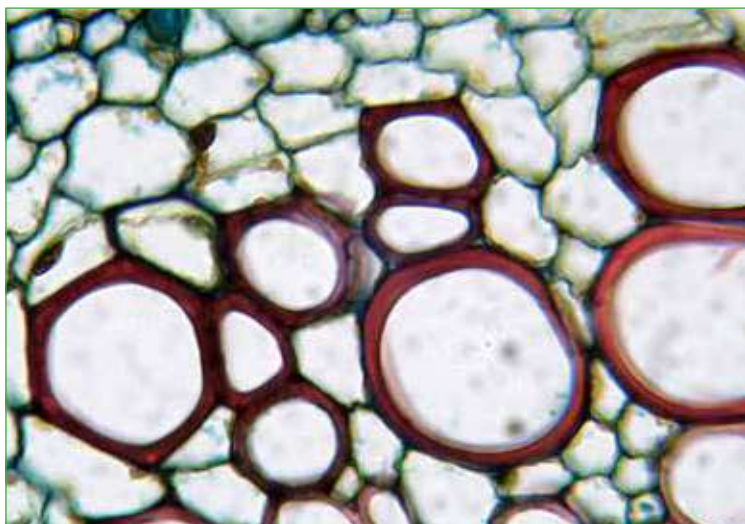
Lizard (Lacerta)wide surface lung t.s. - Lizard (Lacerta) kidney - Adder (Elaphe) muscles of snake t.s. - Adder (Elaphe) stomach with acid glands of snake - Goose (Anser) plume feather w.m. - Duck (Anas) gizzard with thicklining t.s.- Turkey (Meleagris) wing feather w.m. - Chicken (Gallus) cockscomb,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

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

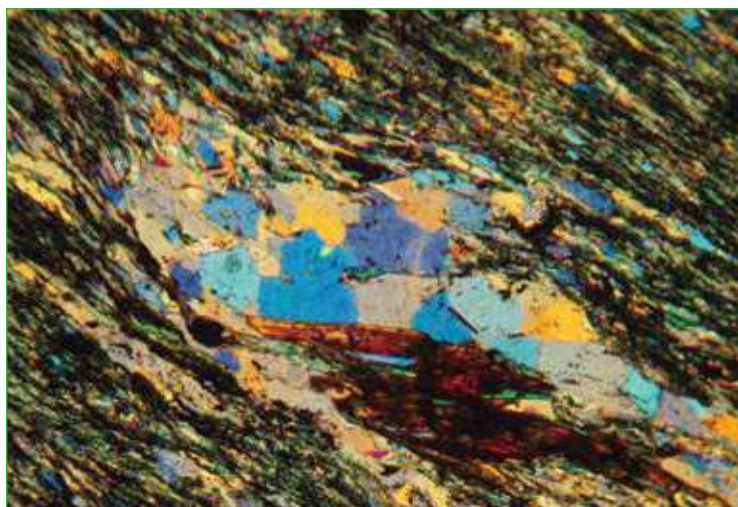
Hay bacilli (Bacillus subtilis) - Milk souring bacteria (Streptococcus lactis) - Putrefaction bacteria (Proteus vulgaris) - Intestinal bacteria (Escherichia coli) - Paratyphoid bacteria (Salmonella paratyphi) - Bacillary dysentery (Shigella dysenteriae) - Pus bacteria (Staphylococcus pyogenes) - Bacteria 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 - Hydatid 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**

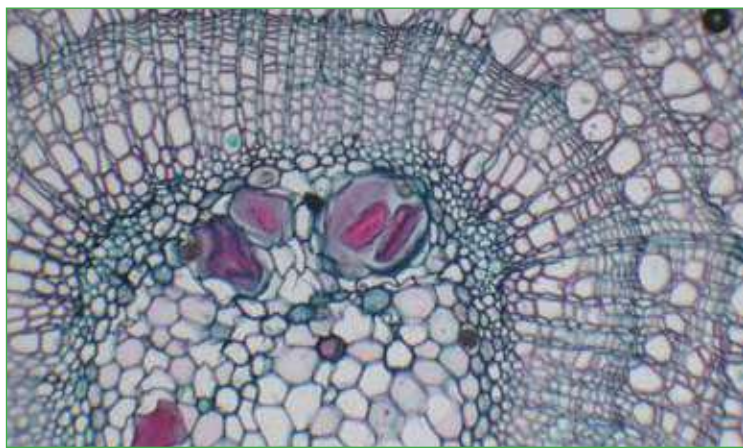
Leg of house fly, *Musca domestica* - Bird feather w.m. - Wing scales of butterfly - Human blood smear - Intestine of rabbit t.s. - Lung of cat t.s. - Mixed zoological and botanical plankton - Pollen grains of different plants - Foliate leaf with netted venation - Large cells, marrow of edelberry

**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, oogenesis 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 - Influenzal 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.

