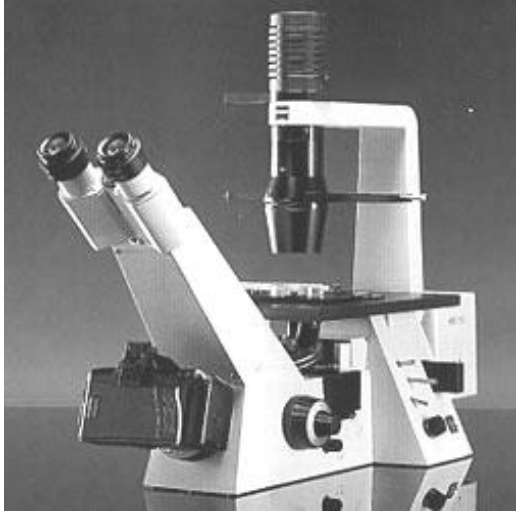


Axiovert 25 Inverted
@ BRDG, R

Nikon Labophot @FV
SM244, 245

Student Scopes (various)

Microscope SOP

(see Projection SOP for other information)

Parco XMZ Stereo
@BRDG

Parco LTM-800
@BRDG

Leica 4000DMI Fluorescent
@BRDG

Service/Repair/Bulbs

Prepared by: Bob Morrison
STLCC, Instrumentation Specialist

SM244 and SM245 : Nikon Labophot -2

Camera Control CMA-

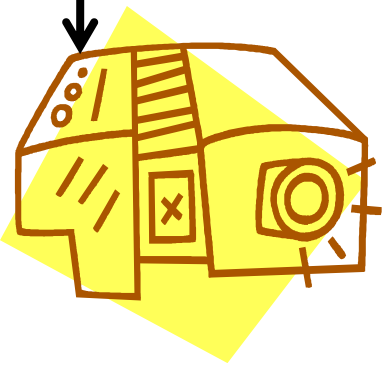
Turn “on” (green light) on bottom shelf of cart

VCR/DVD Player, Turn On And set to VCR mode

Turn dial on selector box To DVD/VCR setting.

Selector box

Epson remote used To power on projector



Camera 3CCD (details Slide #7)

View Selector Control Rod Eyepiece (push in) Camera (pull out)

Pull out for Projection

Objectives 4,10,20,40x

Focus & Fine focus

Condenser Diaphragm Adjustment

Light Source Slide Adjustment

Off/On

Microscopy: SM244 & SM245 Projecting the Microscope to Screen

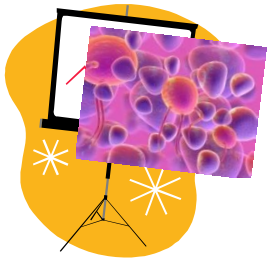
1. **Power on the Microscope**
2. **Power on the VCR/DVD device and set it to VCR mode.**
3. **Power on the Projector using the Epson remote**
4. **Power on the white Sony CMA-D2 1" x 6" box on the bottom shelf**
5. **Turn the dial on the small video selector control box to DVD/VCR settings**
6. **Focus the specimen in the microscope eyepiece as you would for normal observations. Note, this requires that the View Selector Rod (blue on diagram) is in the full "in" position to deflect light toward the eyepieces.**

- **Pull the View Selector Rod (blue box on diagram) on the right side of the microscope frame supporting the eyepiece to the "out" position. This deflects light from the eyepiece to the camera**
- **If you still see any light in the eyepieces, pull the View rod to the full out position.**
- **When finished with the camera/projector, push the View rod to the "in" position to resume using the eyepiece for adjustments or another specimen**

Note: If the projected view dims or adjust automatically to an unsatisfactory image, adjustments can be made on the camera Auto Exposure modes (see slide #7). A setting to manual mode is often effective.

Link to SM 244 and SM245 Computer/Projection Instructions (pdf)

Microscope: Axiovert 25 @ BRDG R124 / SLCC # 0097770

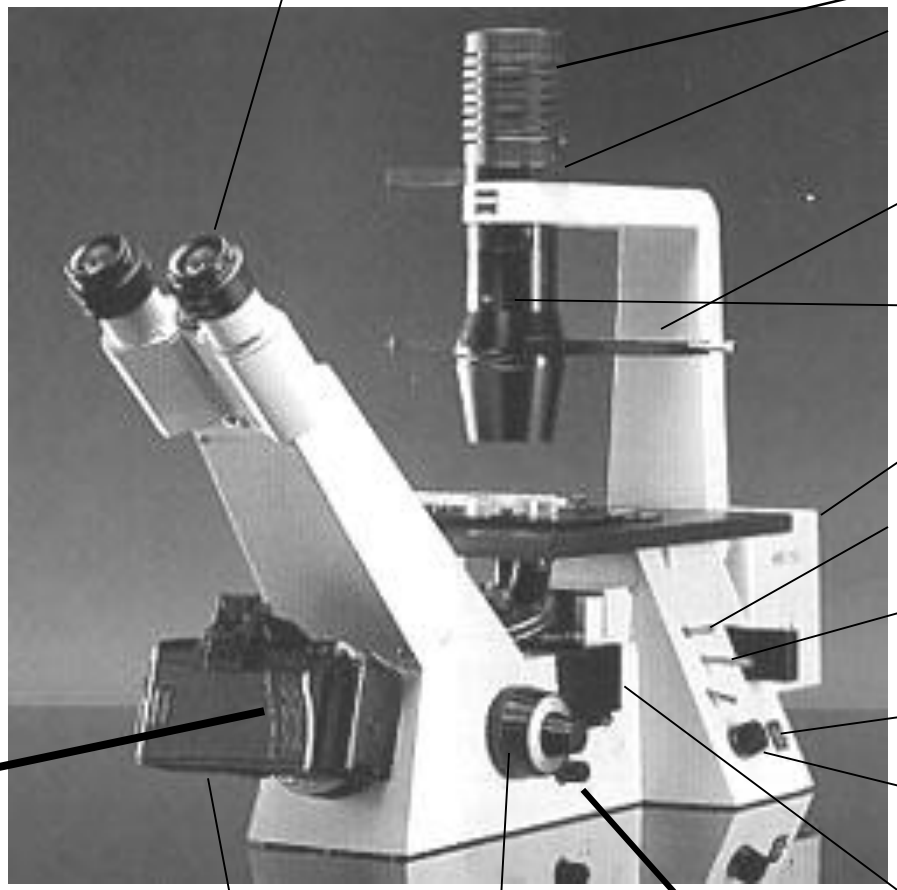


To Projector

PC/Monitor

Svideo to USB box

MTI-DAGE Camera Control Unit (CCU)



Occular/Eyepiece

Light Source

Condenser Light Shunt

Filter Guide
Phase, Clear, Varel

Condenser Light
Diaphragm (must be pulled fully forward)

HBO Aux Light Source

Aperture Center Screws

Diaphragm Pushrod

Off/On

Light Source Adjust

Reflector Modules
Filters/Fluorescence

Off/On
W green indicator

Set Gain to "manual"

Camera

Focus &
Fine focus

View Selector Knob
Eyepiece (clockwise)
Projection (ccw)

Microscopy: Axiovert ; Capturing Images for PC and Projector

1. **Power on the Microscope, Camera Control Unit (MIT–DAGE 2” x 5” box), and the Projector**

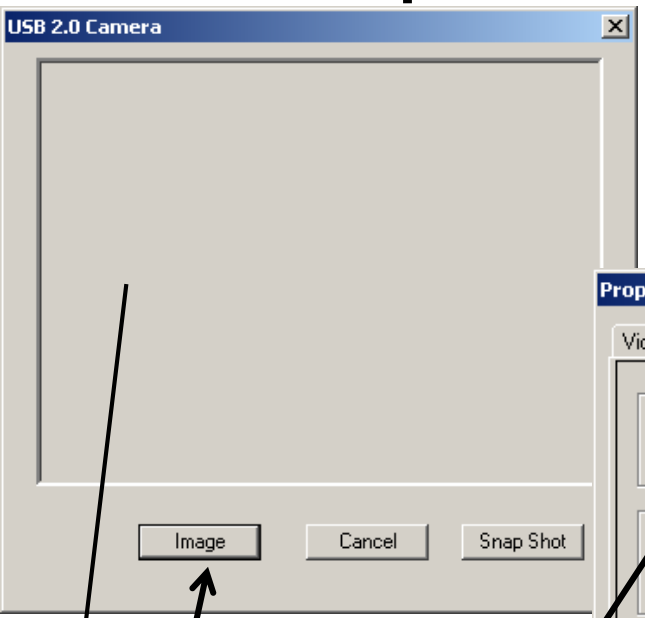
   - **Verify that the CCU box is “on” with green LED shown.**
   - **Make sure the Gain switch on the CCU is set to “Manual” to avoid camera attempts to rebalance brightness and thus dim your scope image.**
   - **Projector is controlled by Epson remote, red power-on button. The “Video” button at the 6-9pm position gives control to the camera.**

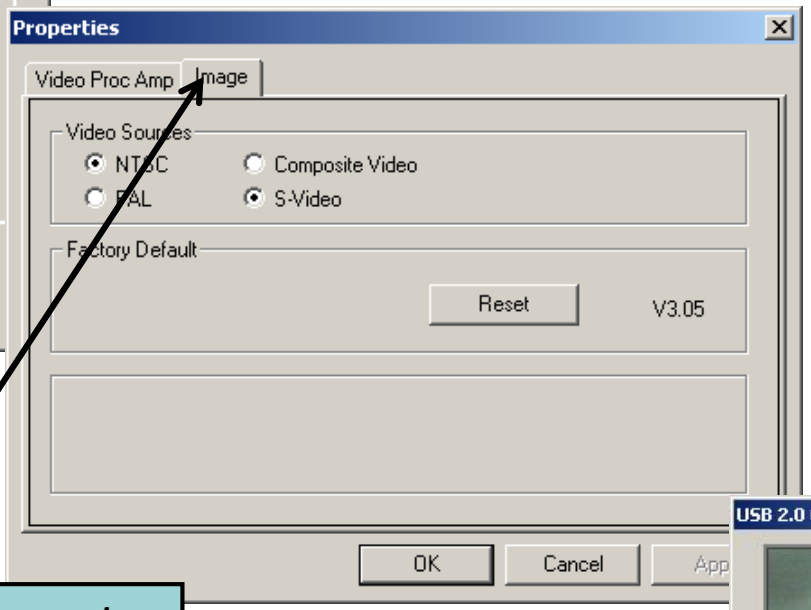
2. **Turn the View Selector Knob on the scope (next to the main focus dials) clockwise until it hits stop at about 4pm position, this directs light toward the eyepieces**
   - **Focus on specimen, adjust condenser, and light controls to get desired image**

3. **Turn the View Selector Knob counterclockwise to stop position about 10am position, this directs light toward the camera and then through an adapter to the PC/projector**

4. **Viewing and Capturing Images ; Start the Adobe Photoshop Program**
   - **Select “Start from Scratch”, then “CANCEL” the next popup menu**
   - **Select “File”, then “Import”, then “USB Camera Device”**
   - **If the scope image does not appear in the popup window, select “Image” at the bottom and then select the “Image” tab. <u>On this menu set the input mode to S-Video and NTSC</u> (should be the default settings)**
   - **Adjust brightness and other parameters using slide bar controls**
   - **Select “Capture Still Image”, and verify capture in popup window**
   - **Select “File”, then “Save”, then enter a filename and format (usually .jpg)**
   - **Close/Exit the Adobe Photoshop application when finished with all captures**

Microscope: Inverted, Image Capture, Set Video Source





1. If the scope image does not appear, select Image.
2. Select the Image tab and then make sure NTSC and S-Video boxes are set,
3. Scope image should now appear

Microscope: Axiovert, Camera and Control Unit

MTI-DAGE DC-330 Camera and Control Unit (CCU)

Camera cable input port

Off/On W green indicator

Camera output ports on rear(Svideo)

10-bit, *digital* processing
Resolution up to 750 TV lines
On-chip integration to 8 seconds
(256 frames)
Digital horizontal and verticle detail enhancement
On screen programming for 41 internal camera functions
Three user-defined memories retain camera settings
RS-232c interface
Automatic color shading correction
RGB, Y/C, NTSC, or B/W video outputs

Set Gain to "manual" to avoid auto adjustment changing scope view.

HotLink to DC-330 Camera Specs on a website

Microscope: Axiovert 25, User Manual, Fluorescent Viewing

2.4.5 Reflected light fluorescence

requires the use of the Axiovert 25 CFL microscope stand.

- Select a point on the specimen in transmitted light brightfield or phase contrast. To do this, switch the reflector mount (2-22/10) to free passage, switch on the halogen lamp (2-22/2) and move the phase slider (2-22/3) to the middle position (brightfield) or to the position with the ring diaphragm (phase contrast).
- Switch on the HBO 50 lamp (2-22/5) by means of the power supply unit, but block the light path using the additional filter slider (2-22/6).
- After selecting the specimen position, cover the transmitted light beam path by means of the cover plate (2-22/11) in the Ph/3-fold slider (2-22/3) or switch off the halogen lamp.
- With the reflector mount (2-22/10), slide in the required filter combination (2-22/9) and release the light path by pulling the additional filter slide (2-22/6).
- By means of the push rod (2-22/7), close the luminous field diaphragm until it is visible in the image, move it to the middle position by means of the centring screws (2-22/8) and open it up to the edge of the field of view.
- Additional excitation filters with a diameter of 25 mm, which must be held by means of zero rings, can be inserted in the additional filter slider (2-22/6) of the reflected light unit Fl.
- The additional filter slider (2-22/6) allows no light to pass in the center stop position.

Link to Zeiss Axiovert 25 CFI User Manual (pdf)

Microscope: Axiovert 25, Fluorescence, Ref. Figure

Lamp Halogen w clipmount
HLWS-A 6V30W,
NARVA Part#:000000-0402-943
(have spares @BRDG)

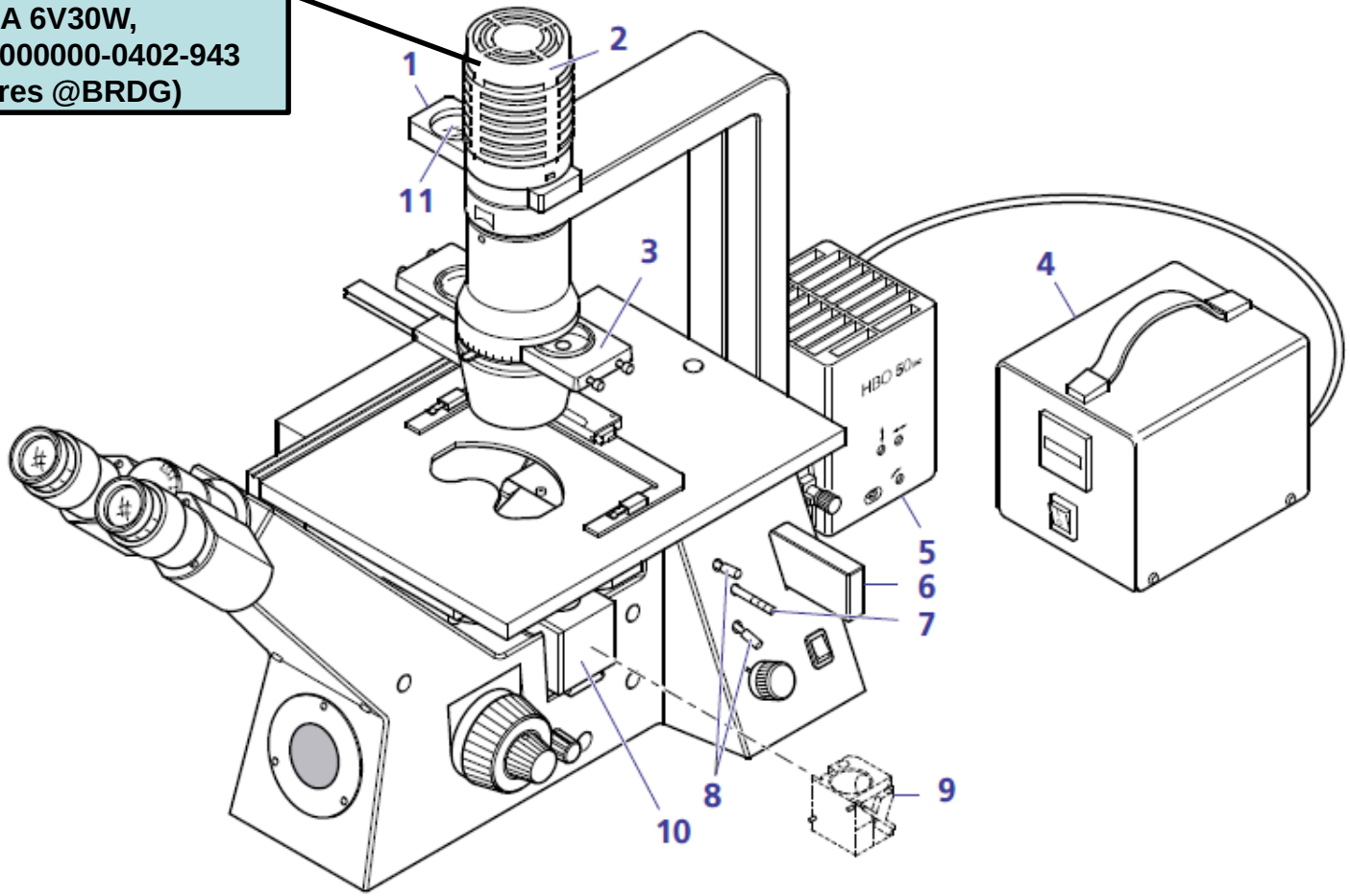
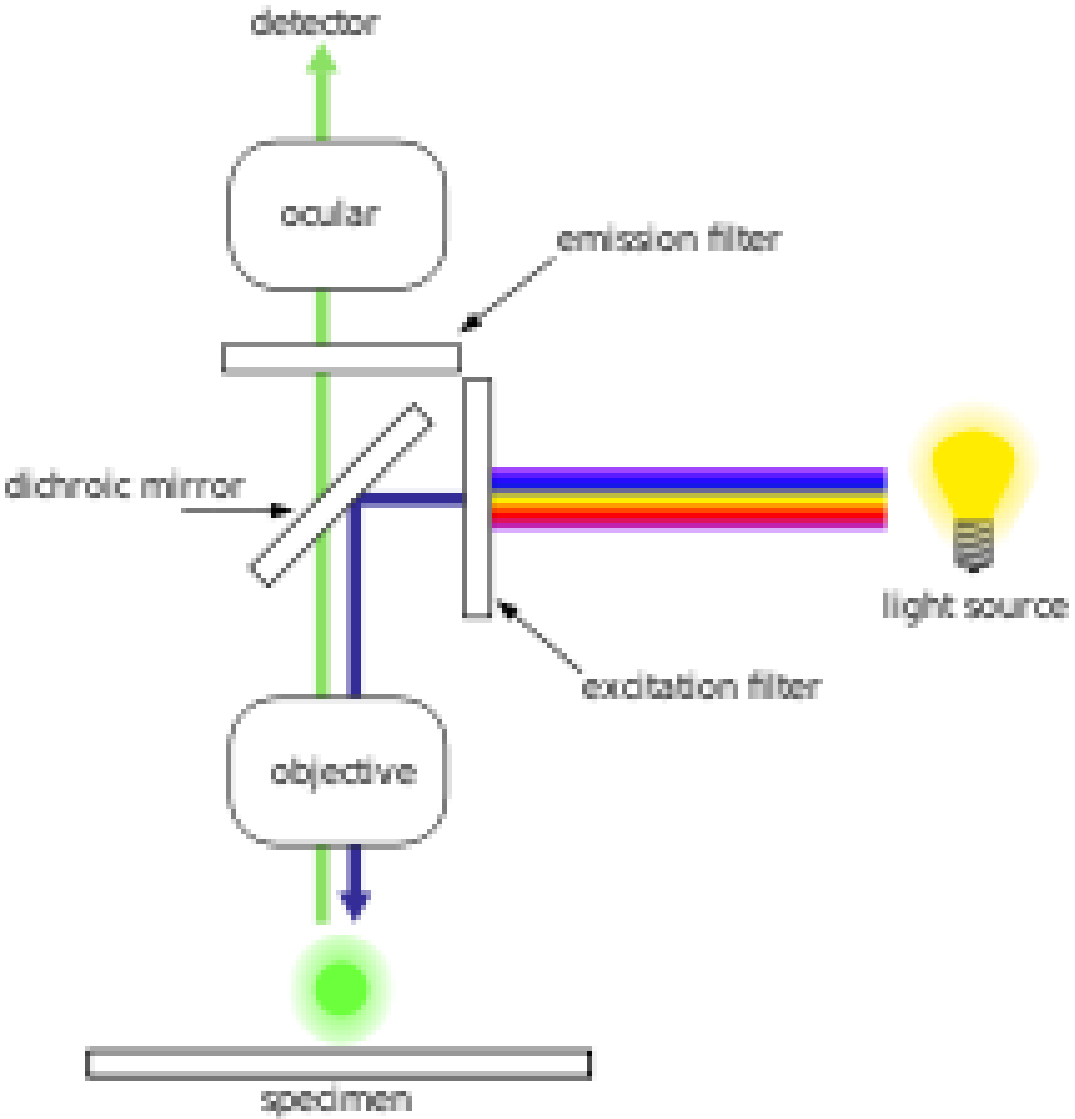


Figure 2-22 Observation under reflected light fluorescence

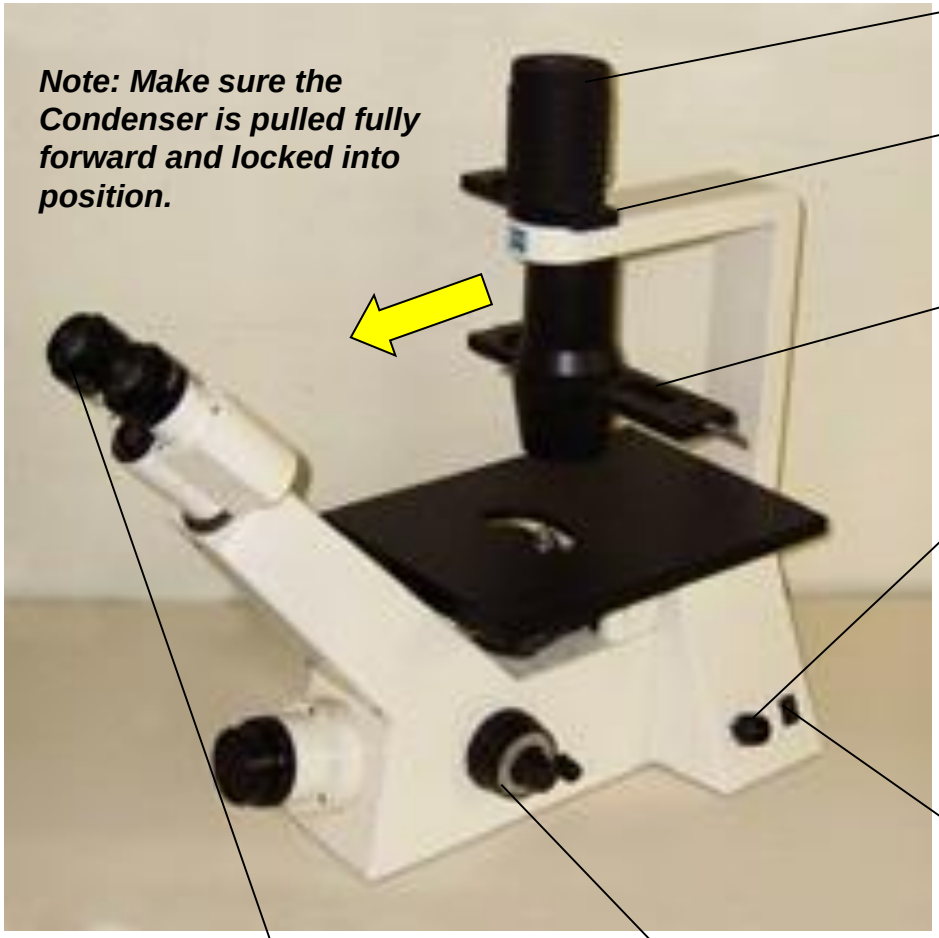
Link to Zeiss Axiovert 25 CFI User Manual (pdf)

8.26 x 11.69 in

Microscope: Fluorescence, Typical Path and Filters



Microscope: Axiovert 25 @BRDG, Countertop / SN #668654



Light Source

Condenser Light Diaphragm Adjustment

Filter Guide Phase, Clear, Varel

Light Source Adjustment

Link to Zeiss Axiovert 25 CFI User Manual (pdf)

Off/On

Eyepieces

Focus & Fine focus

Note: This bench device does not have a camera.

Microscope: Stereo/ Dissecting, @BRDG, Parco XMZ

XMZ-833-10L Binocular 10x WF 7.5x to 35x Top Halogen Bottom LED

Parco, XMZ series	XMZ	0620131	1/25/10 RGM, BS recd,	OK for Use	7/12/12 RGM Power supply out, thus incident light does not work, seeking supplier of part

- Binocular head inclined at at 45º angle
- Paired 10x wide-field eyepieces
- Working distance of 85mm
- Interpupillary adjustment of 55 to 75mm
- Dual diopter adjustments
- Coated optics for crisp image and superior resolution
- Illumination and stand for examining opaque or translucent specimens
- Heavy-duty rack and pinion focusing with slip clutch and tension adjustment
- Includes a 75mm frosted stage plate and 75mm reversible black/white stage
- Locked-on spring mounted stage clips
- 120V 20W

Power Supply Internal, reqd for incident lighting 110VAC to 12V DC

Parco XMZ Series

PREVENTIVE USE AND MAINTENANCE OF YOUR PARCO XMZ SERIES MICROSCOPE

The PARCO microscope requires only minimum maintenance and has features designed to prevent many of the accidents common to most student microscopes. These features include locked-in stage clips and eyepieces, eliminating easy loss and damage. We have also eliminated a large percentage of annoying mechanical problems by locking the Rack & Pinion Gearing Mechanism together. If forced, the focus knob controlling the movement of the gears will turn freely, a patented system.

OPTICAL PARTS-

The eyepiece, objective, condensers and reflecting optical elements are the most delicate parts of your microscope. Care should be exercised to safeguard these elements against abuse or extra rough treatment. Your microscope should be kept covered with the PARCO cover (#59A-0800) when not in use. This helps keep dust off optical elements and the gearing mechanism. Dirt settling in the gears causes excessive wear and should be kept clean to prolong the life of your instrument.

CLEANING THE OPTICS-

When specks or smears appear in the field of view, the optics need cleaned. If the specks move when rotating the eyepiece, clean the top of the eyepiece. The front lens of the objective should be cleaned by first brushing with a soft camel hair brush, lens paper, or clean cotton cloth to remove dust particles. If this does not remove the smudge, moisten lens tissue (PARCO #63B-4005) with a good lens cleaner (PARCO #63B-3999) and dry with clean lens tissue at once. (Dry with soft circular motion.) Do not take the objectives apart; this should only be done by a qualified PARCO serviceman.

CLEANING THE FINISH ON THE MICROSCOPE-

The finish of the microscope is hard epoxy and is acid resistant. It is extremely durable and stands up well under rough use. Use a soft cotton cloth to wipe clean. When cleaning the frame, exercise care not to smear the optics.

MECHANICAL-

The focusing mechanism of the PARCO microscope should be removed periodically (once a year) and slideways lubricated with a thin film of Plastilube. Before lubricating, remove old film and clean slideways thoroughly. This should be done by a PARCO serviceman.

It is in you own best interest to have your microscope serviced at least every two years by a trained PARCO serviceman. A microscope has very little value when not in proper working condition. PARCO STANDS TO BE OF SERVICE TO YOU.

CORRECTING BASIC MECHANICAL PROBLEMS

DRIFTING-

If the focus block of your microscope falls by the weight of gravity and will not stay in a focused position, it is said to be "drifting". It is the result of loss of tersion in the pinion mechanism due to normal and constant use. The tension is easily and quickly adjusted. You need not employ the services of a microscope technician to perform this function.

To correct for drifting, immediately to the right of the left focus knob there is a pinion tension adjustment ring. Turn the adjustment ring in a clockwise motion in relation to the focus knob. A 1/4 to 1/2 turn is all that should be necessary.

REPLACING ILLUMINATOR BULBS-

To replace the bottom bulb on the stand-Unplug the line cord. Wait until the bulb is cooled. Turn the microscope on its side and remove the three screws, located on the outer edge, which hold the base cover on. Remove the old bulb by pulling it straight out of its socket. You will feel it release from its mount. Install the new bulb by reversing the above procedure.

To replace the top bulb on the stand-Unplug the line cord. Wait until the bulb has cooled. While holding the cover to prevent it from falling, remove the two screws which hold the illuminator cover on by turning them counterclockwise. Grasp the halogen bulb with your thumb and index finger pulling it straight out of its socket. To replace the halogen bulb, use the plastic wrapper the bulb is packed in to reinsert the bulb into the socket. *NOTE: Do not touch the halogen bulb with your fingers,* this will shorten the life of the halogen bulb. Reinstall the illuminator cover by reversing the above procedure.

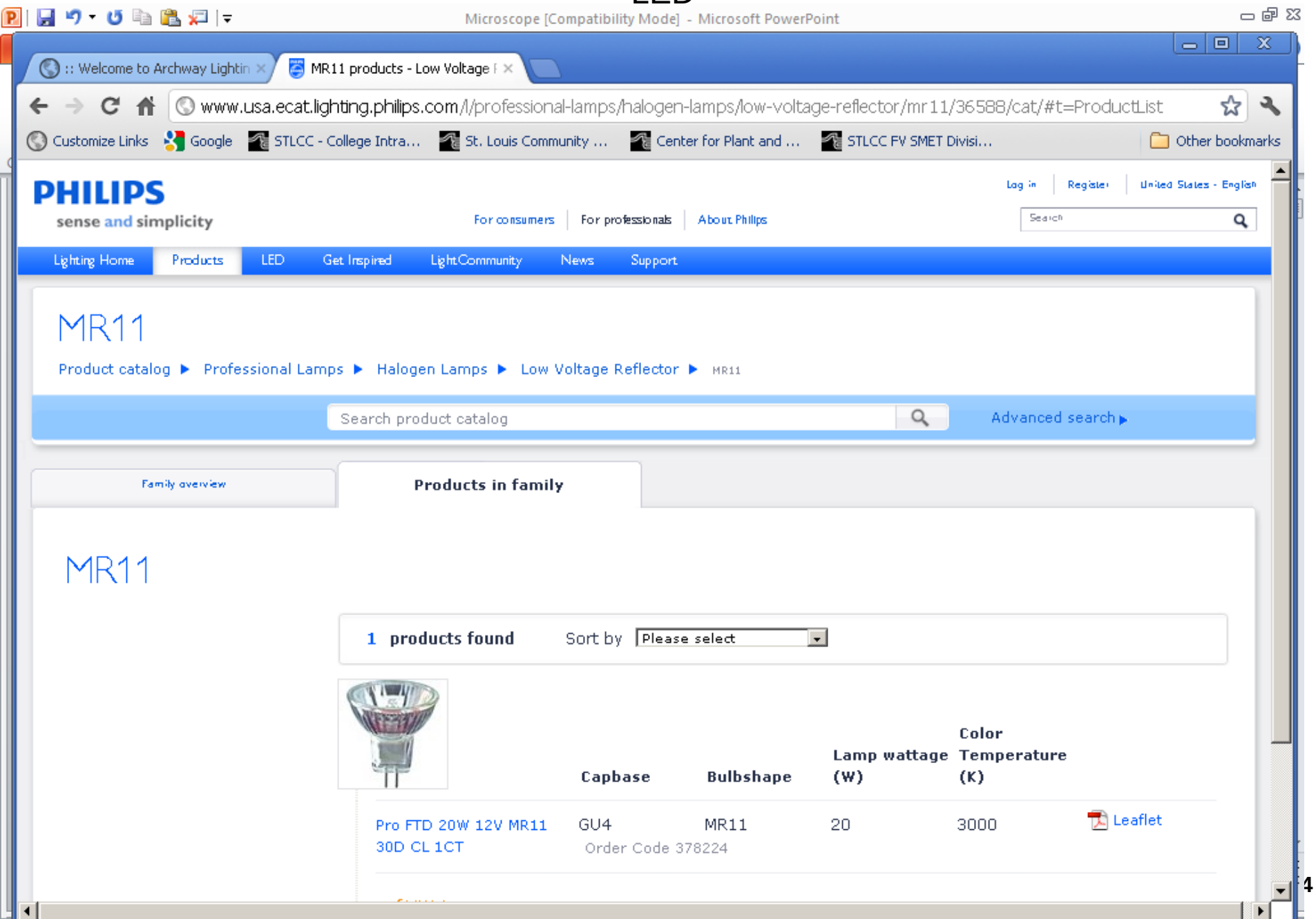
PARCO
SCIENTIFIC COMPANY
Instrument Division

Phone: 800-247-2726
Fax: 216-394-2403
P.O. Box 189
Vienna, OH 44473

Microscope: Parco XMZ Series Instruction Manual

Focus: Holding problem; Correction

Microscope: Bulb, XMZ-833-10L Binocular 10x WF 7.5x to 35x Top Halogen Bottom LED



Microscope: Parco LTM-800, @BRDG, Binocular

LTM-802-P Monocular 10x WF w/Pointer 4x, 10x, 40xR, 100xR Halogen

Use choke ring collar around left side course focus knob to tighten tension on stage (prevent sagging stage)

- Choice of 45º monocular, 90º dual view video, binocular or trinocular head
- 10x wide-field eyepiece with calibrated pointer (on select models)
- DIN achromatic objectives are parfocaled and parcentered
- Quadruple nosepiece has precision ball bearing movement with precision stops
- Coaxial coarse and fine focusing with planetary reduction gear system
- Positive stops at both ends of the stage to prevent damage to specimens and optics
- 6V halogen illumination with two element condenser and advanced electronics
- Adjustable light intensity control know
- Built-in mechanical stage, 1.25 N.A. Abbe condenser, iris diaphragm and blue filter
- Spring loaded stage clamp for exact positioning of specimen
- Tension adjustment eliminates stage drift

Microscope: Parco, LTM 800 Series Instruction Manual

PARCO LTM 800 Series

Condenser nearly touching the slide specimen. Ideally a drop of immersion oil is placed between the condenser and the slide, as well as between the slide and the 100X objective. Although the practice is not often followed in routine study, it is the only way to take full advantage of the inherent resolutions of the 1.25 N.A. condenser.

I. USING THE FOCUS STOP

The vertical travel of the stage can be restricted by the auto focus stop. Located immediately to the right of the left focus knob is a focus stop lever. Elevate the stage to the point of maximum desired travel then engage the stop by turning the lever firmly in a clockwise direction. To disengage the stop, rotate the lever counterclockwise.

J. USING THE TENSION CONTROL

The tension control is provided to allow the individual user to adjust the focus tension to his/her own preference. Located immediately to the left of the right focus knob there is a tension control ring to increase the tension. Turn the tension control ring clockwise; to decrease it, turn the tension control ring counterclockwise.

PREVENTIVE USE AND MAINTENANCE OF YOUR PARCO LTM 800 MICROSCOPE

The PARCO microscope requires only minimum maintenance and has features designed to prevent many of the accidents common to most student microscopes.

OPTICAL PARTS-

The eyepiece, objective, condensers and reflecting optical elements are the most delicate parts of your microscope. Care should be exercised to safeguard these elements against abuse or extra rough treatment. Your microscope should be kept covered with the PARCO cover (#58A-0334) when not in use. This helps keep dust off optical elements and the gearing mechanism. Dirt settling in the gears causes excessive wear and should be kept clean to prolong the life of your instrument.

CLEANING THE OPTICS-

When specks or smears appear in the field of view, the optics need cleaned. If the specks move when rotating the eyepiece, clean the top of the eyepiece. If the specks move when the slide is moved, clean the cover glass of the slide. The front lens of the objective should be cleaned by first brushing with a soft camel hair brush, lens paper, or clean cotton cloth to remove dust particles. If this does not remove the smudge, moisten lens tissue (PARCO #63-4005) with a good lens cleaner (PARCO #63-3999) and dry with clean lens tissue at once. (Dry with soft circular motion.) Do not take the objectives apart; this should only be done by a qualified PARCO serviceman.

CLEANING THE FINISH ON THE MICROSCOPE-

The finish of the microscope is hard epoxy and is acid resistant. It is extremely durable and stands up well under rough use. Use a soft cotton cloth to wipe clean. When cleaning the frame, exercise care not to smear the optics.

MECHANICAL-

The focusing mechanism of the PARCO microscope should be removed periodically (once a year) and slideways lubricated with a thin film of Plastilube. Before lubricating, remove old film and clean slideways thoroughly. This should be done by a PARCO serviceman. The mirror, in base illuminator, and condenser are not too sensitive to dust. It is wise, nonetheless, to keep these parts clean as all dirt films in the light pathway will affect resolution. A soft lint-free cloth is satisfactory.

It is in you own best interest to have your microscope serviced at least every two years by a trained PARCO serviceman. A microscope has very little value when not in proper working condition. PARCO STANDS TO BE OF SERVICE TO YOU.

CORRECTING BASIC MECHANICAL PROBLEMS

DRIFTING-

If the stage of your microscope falls by the weight of gravity and will not stay in a focused position, it is said to be "drifting". It is the result of loss of tension in the pinion mechanism due to normal and constant use. The tension is easily and quickly adjusted. You need not employ the services of a microscope technician to perform this function.

To correct for drifting, immediately to the left of the right focus knob there is a tension adjustment ring. Turn the adjustment ring in a clockwise motion in relation to the focus knob. A 1/4 to 1/2 turn is all that should be necessary.

REPLACING ILLUMINATOR BULBS-

Unplug the line cord. Wait until the bulb is cooled. Lay the microscope on its side and remove the bulb access door by turning the lock screw counterclockwise. (NOTE: On binocular and trinocular microscopes remove the eyepieces as they could fall out and get damaged when the microscope is tipped.) Remove the old bulb by pulling it out of its socket. *DO NOT TWIST* as the lamp pins may break off and become lodged into the socket. Handle the new bulb only with tissue paper or the plastic in which it is wrapped. Install the new bulb by reversing the procedure. *DO NOT HANDLE NEW BULB WITH BARE FINGERS*-Bulb may explode when heated if not handled correctly. (Replacement Bulb - Parco #58X-7020).

REPLACEMENT FUSE-

To change the fuse simply unscrew the fuse cover located on the back of the base by turning it counterclockwise. Remove the old fuse, insert a new fuse and replace the cover. (Replacement Fuse - Parco #58-7020-06.)

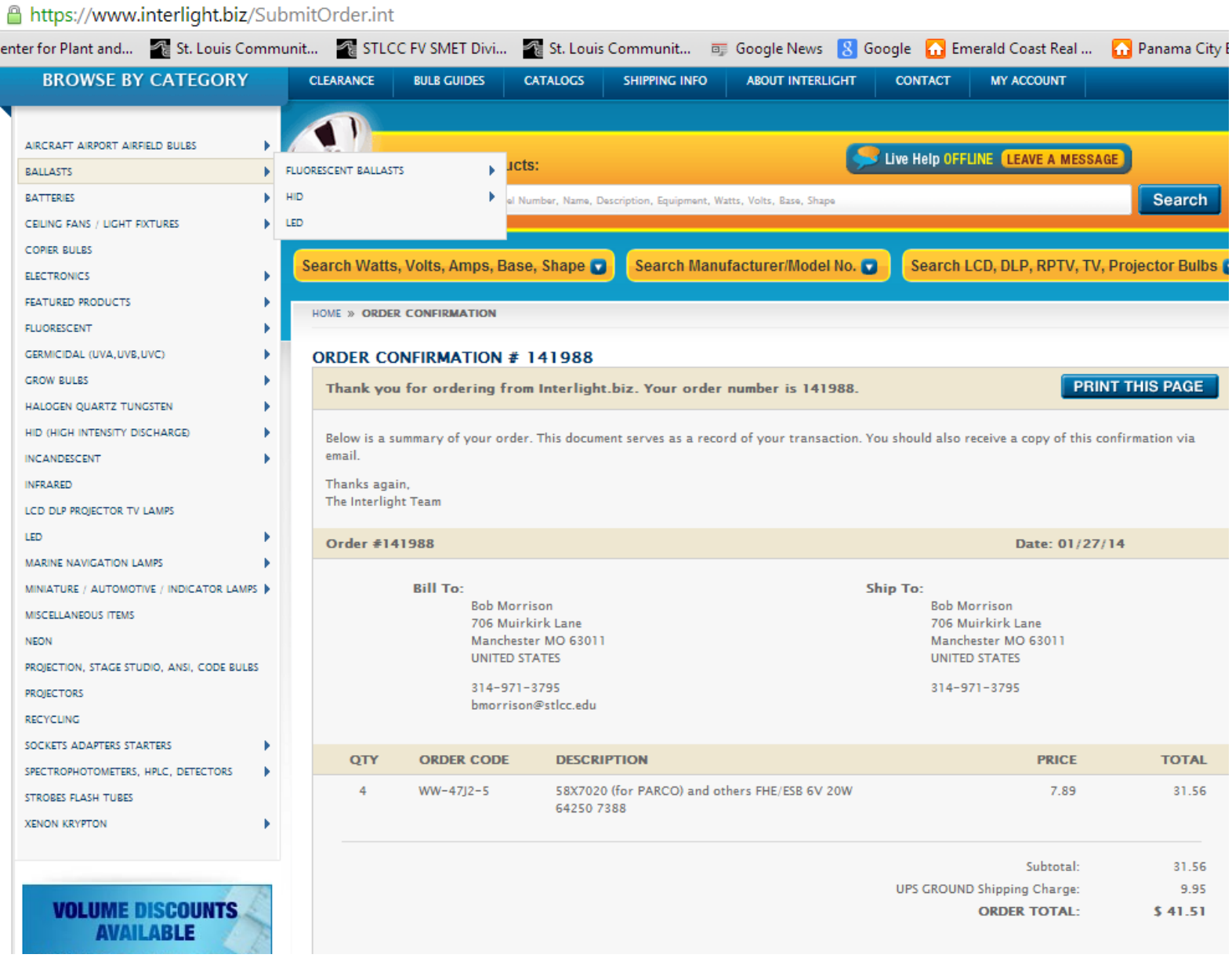
Bulb PARCO 6V 20W #58X-7020

1/25/14 RGM

PARCO SCIENTIFIC COMPANY
Instrument Division
Phone: 800-247-2726
Fax: 216-394-2403
P.O. Box 189
Vienna, OH 44473

Focus: Holding problem; Correction

Microscope: Parco, LTM-800 , Bulb Replacement



Microscope: Parco, Lamp replacement LTM-800 6V 20W, LBB3

parcoscientific.com/products-main/microscopy/microscope-parts-and-accessories/light-bulbs/light-bulbs-lbb2-lbb3

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Light Bulbs LBB2, LBB3

Halogen Bulbs

Product No.	Description	Model/Series	UOM	Price
LBB2	15w, 6v	XMZ-832-10HF, XMZ-856-10HF, XMT-01BF (Top Light)	Each	$9.00
LBB3	20w, 6v	PBH-5000, SBH-6000, PBH-7000, LTM-800, RCM-H	Each	$9.00

Microscope: Lamp 5W replacement

INVOICE

Page 1 of 1

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MANCHESTER MO 63011-4030

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Microscope: Student, Leica DM750

New FV 11/11/09 M1-M27
Designated for Microlab

Microscope for university advanced life science courses
Key Features
Focusable or fixed eyepieces
Field of view of 20mm
45 degree tube
Wear resistant
Energy saving
4/10/40/100Oil Objectives
Standard condenser for magnifications 4x – 100x
Phase turret condenser for brightfield and phase contrast
Flip top condenser for low magnifications
DM750 is available with a 4 position or 5 position nosepiece
Integrated vertical handle provides easy carrying and easy lifting when storing on high shelves
Integrated cord wrap eliminates damage to microscope components
Vertical cord insertion prevents the cord from pulling partially out of the stand while in storage or in use
Unique shape of the microscope stand protects controls from damage when microscopes are stored side-by-side

Microscope: Student-Leica S4E

A rear-facing nosepiece provides comfortable operation
Spring-Loaded, high magnification objectives
A built-in blue filter to prevent filter loss
360° rotatable, 45° viewing bodies
Graduated mechanical stage with Vernier scales provides precise control
Low heat output to provide comfortable viewing and prevent injury
Tungsten-Halogen lamp: 20W, 6V, 2,000 hours life
Design to meet international safety standards 120VA 220-240
Substage rack and pinion condenser

Bulb: KANDOlite, MR11 6V 15W, Hallogen Dichroic GU4, 30 degree, 35mmO

Microscope: Student-Leica CM E

Link to Microscope Educational Materials On Florida State University Website.

The Leica S4 E with 4.8:1 zoom and standard magnification of 6.3x - 30x is the basic model of the Leica StereoZoom® line.
4.8:1 zoom
Standard magnification 6.3x - 30x
Overall ergonomic design and comfortable 38° viewing angle
Largest field of view of any instrument in its class - 36.5mm
Working distance 110mm
The Leica StereoZoom® range offers a flat (planar) field of view.
polymer which makes this combination perfect for electrostatically sensitive work.

Microscope: Oil Immersion, Leica ATC2000

Link to Basic Leica ATC instruction Manual …. pdf

Link to Oil Immersion Guide from Clermont College Website.. htm

Microscope: Local Services, Repairs, Bulb Replacement

Bulb Replacement Orders: Per GN 3/31/11
Archway Lighting Supply Incorporated
(314) 535-1314 2739 Washington Ave, St Louis, MO 63103

1. Call or Go to the archway website: http://www.bfmgraphics.com/al/major_manufacturing.htm
2. Go to the products section or any area and select the phillips hotlink
3. On the Phillips site, select product, then professional lighting http://www.Ecat.Lighting.Philips.Com/l/professional-lamps/ep01_gr_us_lp_prof_atg/cat/us?Omnpg=lamps-professional&lptype=lamps&navaction=pop&navcount=0&omnpc=ep01_gr_us_lp_prof_atg&isleftnav=false
4. Locate type of bulb : compact, fluorescent; halogen…

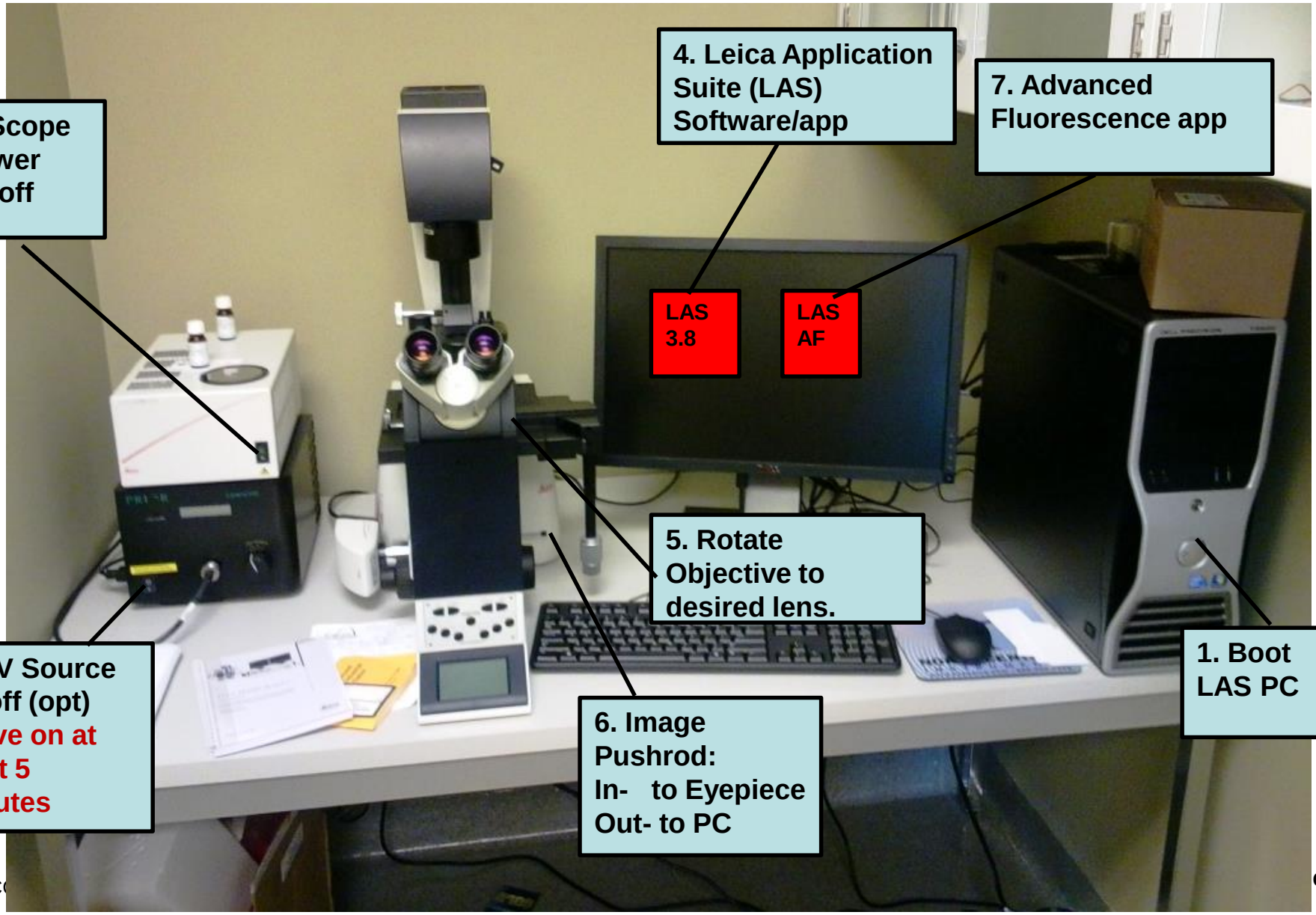
From: Naumann, Virginia L.
Sent: Thursday, July 12, 2012 9:35 AM.
Subject: RE: Microscope repair services, local?

Hitchfel: 2333 S. Hanley Road St. Louis, Missouri 63144 T 800.242.3501

Spakowski Microscope Service: 7739 Brookline Ter, Saint Louis, MO 63117 T (314) 644-6560

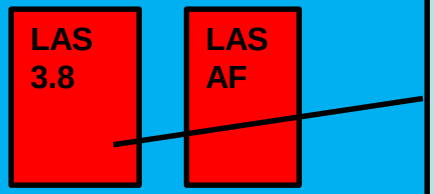
Microscope; Leica DMI4000B, BRDG, Basic Startup

The Leica DMI4000 B automated inverted research microscope is ideal for **scanning cell** and **tissue cultures**. The system features a **fluorescence axis** for **ultra brilliant fluorescence imaging**. The Leica Application Suite (LAS) manages the system.



Microscope; LeicaDMI; Startup Process

1. Turn on Scope , Top white box at left , using on/off green toggle switch.
2. Turn on PC to boot up
3. Login to Windows (password = microscope) and wait for application screen.
4. Focus specimen using eyepiece with side pushrod on scope pushed in toward base
5. Select LAS 3.8 for most applications (brightfield, phase contrast, basic fluorescence)
6. Select LAS AF (Advance Fluorescence) for advanced fluorescence
7. Pull eyepiece/external rod out to shift image to computer LAS application



LAS Windows Icons:

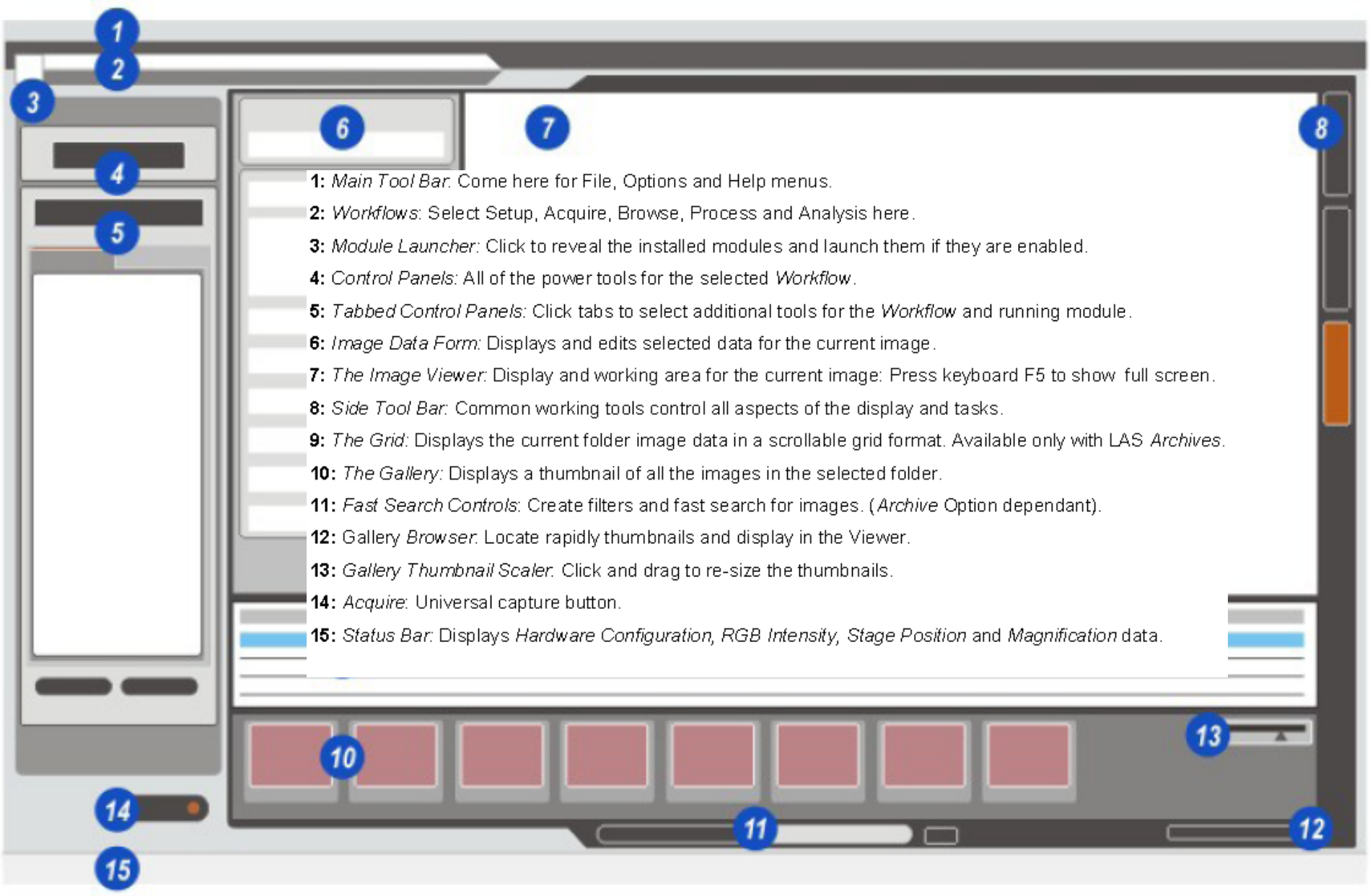
LAS 3.8 Leica Application Suite used for most/general needs

LAS AF Leica Application Suite for Advanced Fluorescence

Hotlink to Leica DMI Application Suite Help Manual … pdf (1087 pgs)

Hotlink to Leica DMI LAS Installation protocol … pdf (82 pgs)

Microscope: LeicaDMI: User Interface Screen Sections



1: *Main Tool Bar*: Come here for File, Options and Help menus.

2: *Workflows*: Select Setup, Acquire, Browse, Process and Analysis here.

3: *Module Launcher*: Click to reveal the installed modules and launch them if they are enabled.

4: *Control Panels*: All of the power tools for the selected *Workflow*.

5: *Tabbed Control Panels*: Click tabs to select additional tools for the *Workflow* and running module.

6: *Image Data Form*: Displays and edits selected data for the current image.

7: *The Image Viewer*: Display and working area for the current image: Press keyboard F5 to show full screen.

8: *Side Tool Bar*: Common working tools control all aspects of the display and tasks.

9: *The Grid*: Displays the current folder image data in a scrollable grid format. Available only with LAS *Archives*.

10: *The Gallery*: Displays a thumbnail of all the images in the selected folder.

11: *Fast Search Controls*: Create filters and fast search for images. (*Archive* Option dependant).

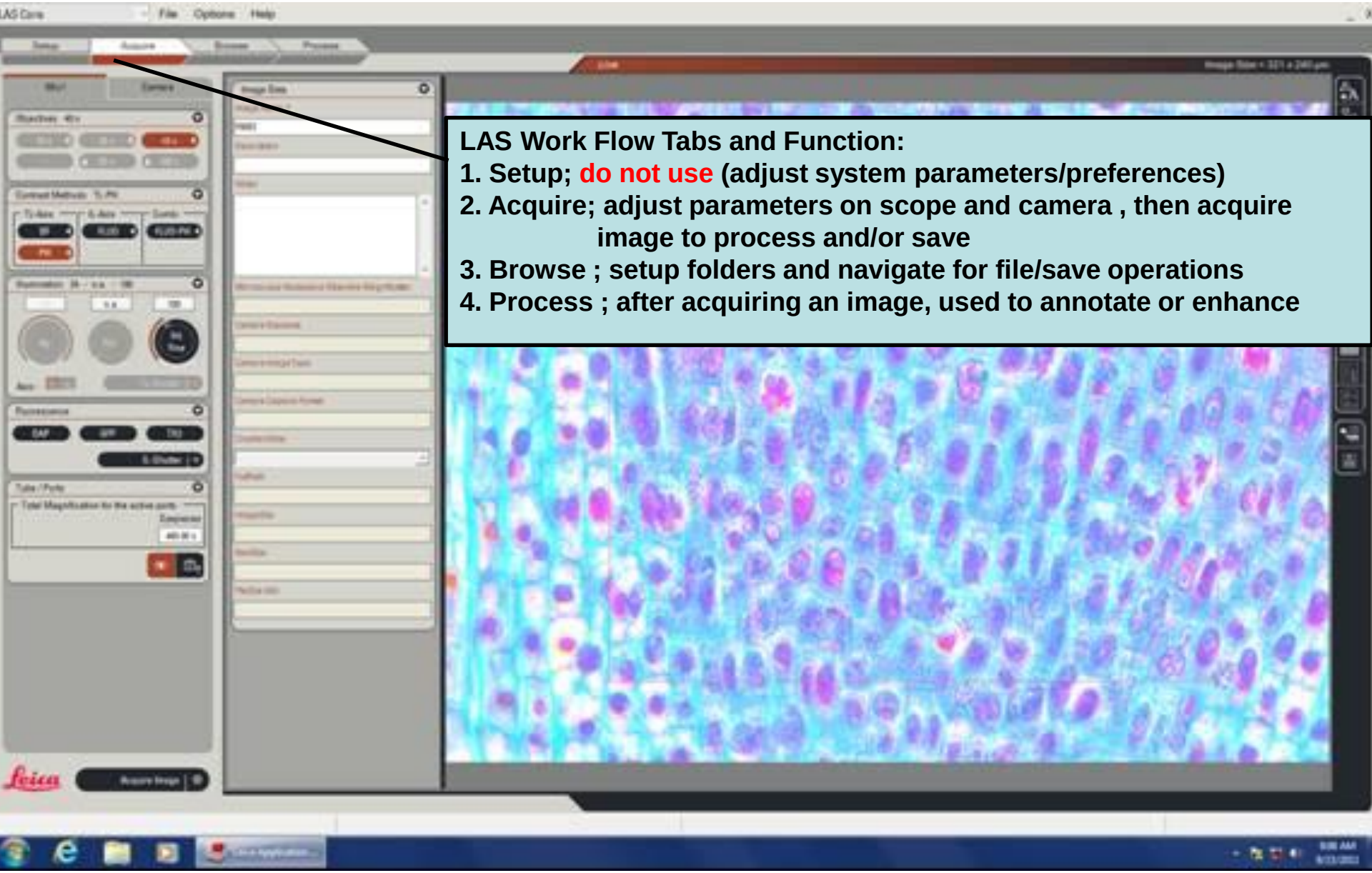
12: Gallery *Browser*: Locate rapidly thumbnails and display in the Viewer.

13: *Gallery Thumbnail Scaler*: Click and drag to re-size the thumbnails.

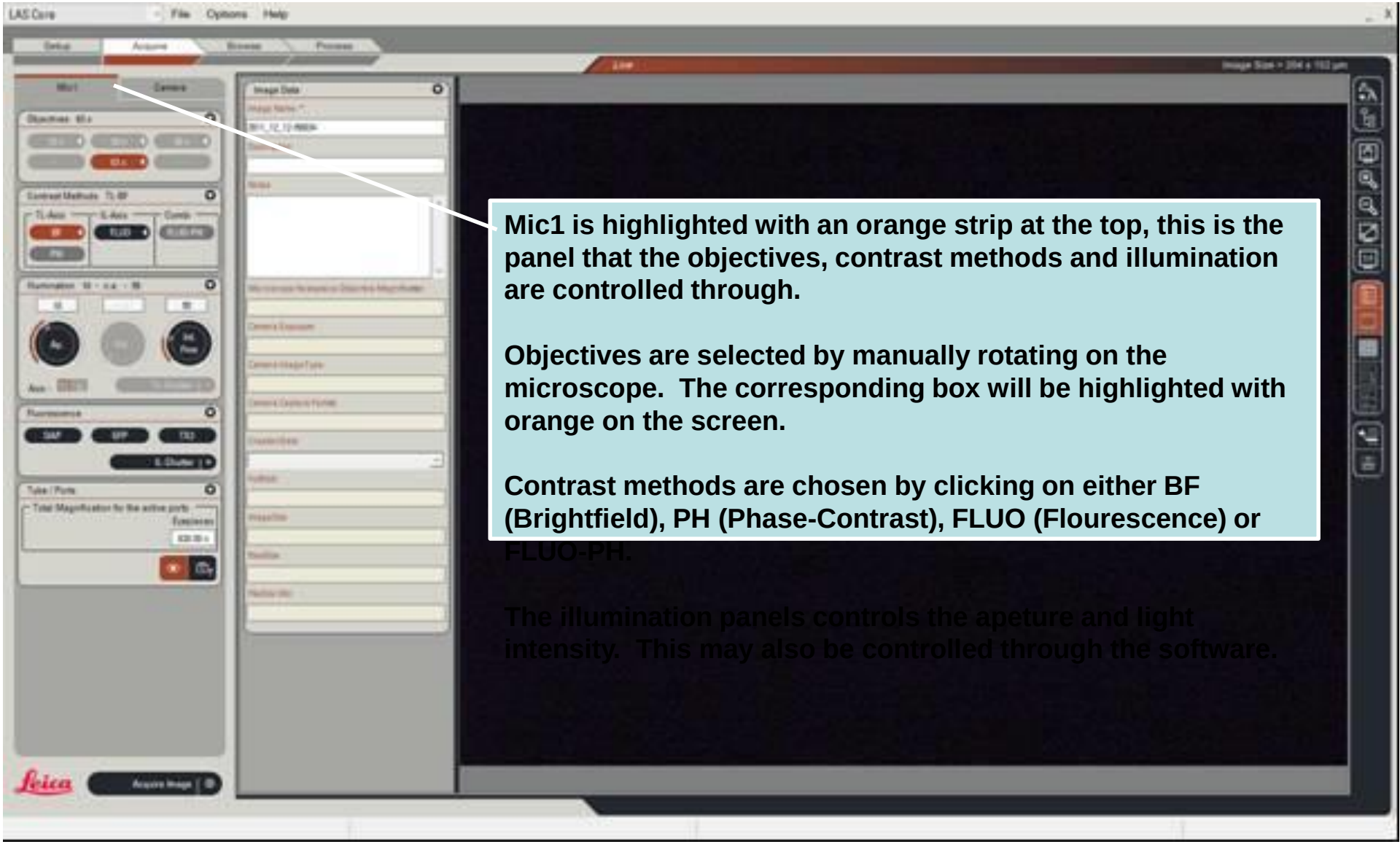
14: *Acquire*: Universal capture button.

15: *Status Bar*: Displays *Hardware Configuration, RGB Intensity, Stage Position* and *Magnification* data.

Microscope: LeicaDMI, Microscope-Work Flow and Functions



Microscope: LeicaDMI, Objective, Contrast Method, Illumination Controls



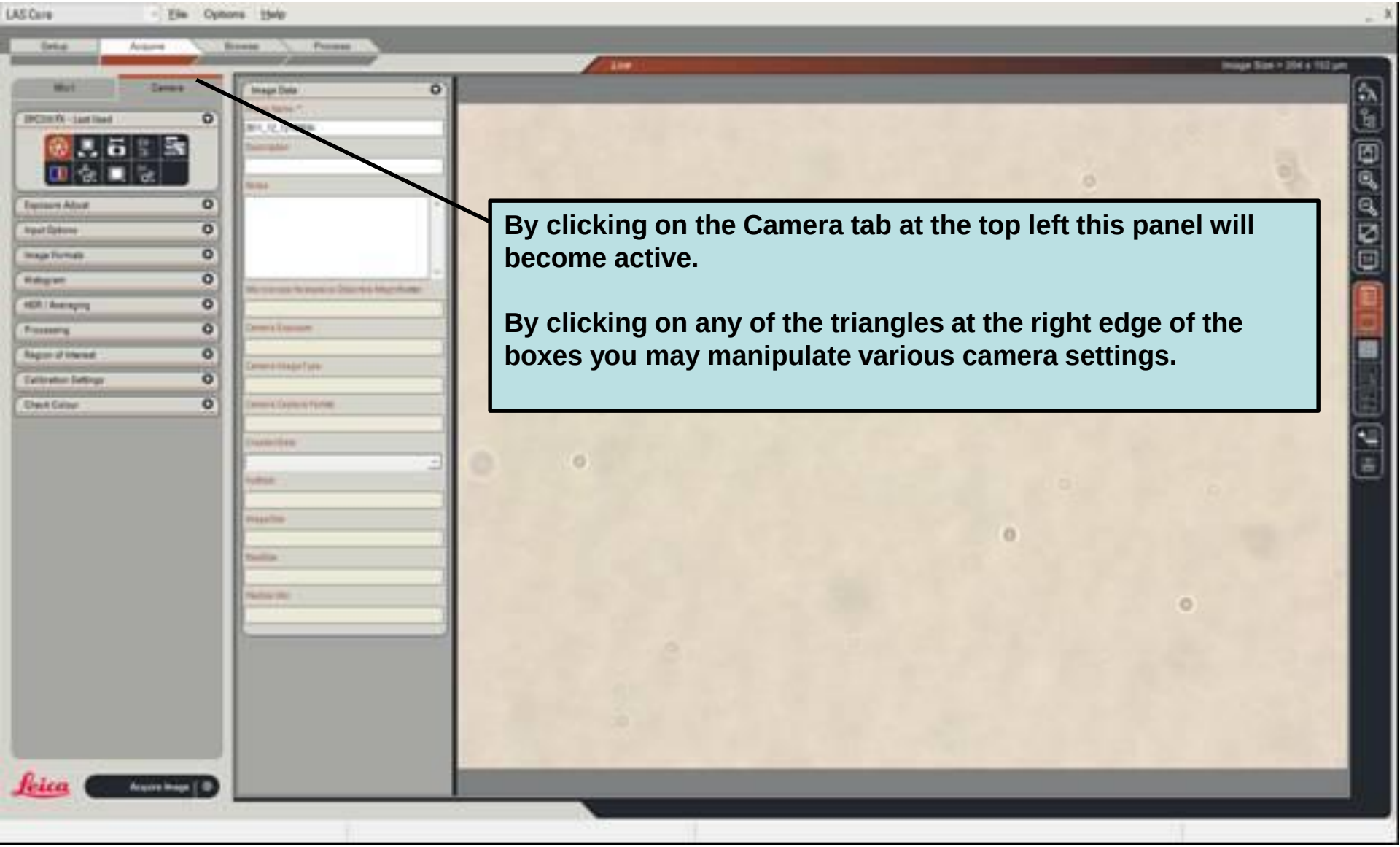
Mic1 is highlighted with an orange strip at the top, this is the panel that the objectives, contrast methods and illumination are controlled through.

Objectives are selected by manually rotating on the microscope. The corresponding box will be highlighted with orange on the screen.

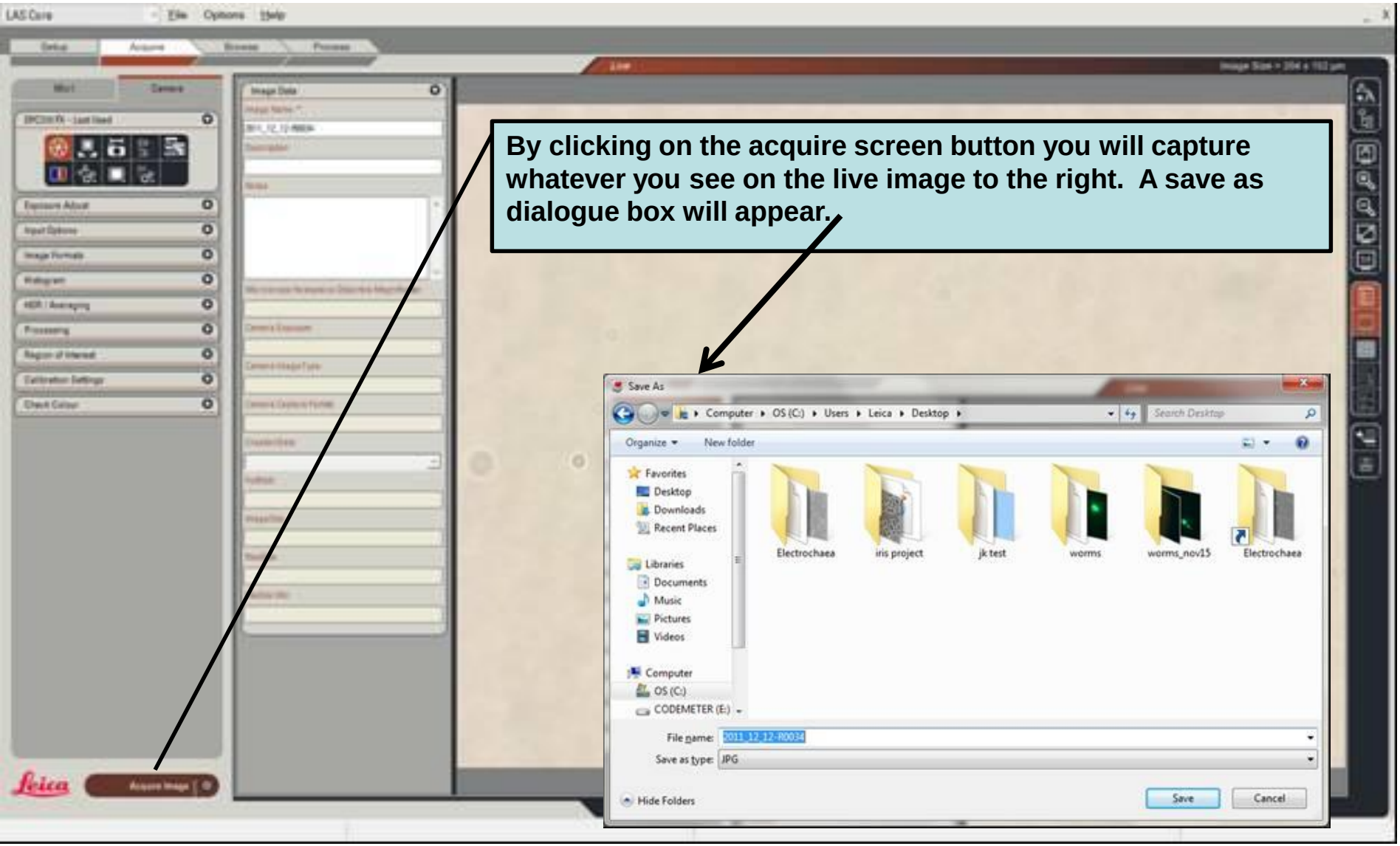
Contrast methods are chosen by clicking on either BF (Brightfield), PH (Phase-Contrast), FLUO (Flourescence) or FLUO-PH.

The illumination panels controls the apeture and light intensity. This may also be controlled through the software.

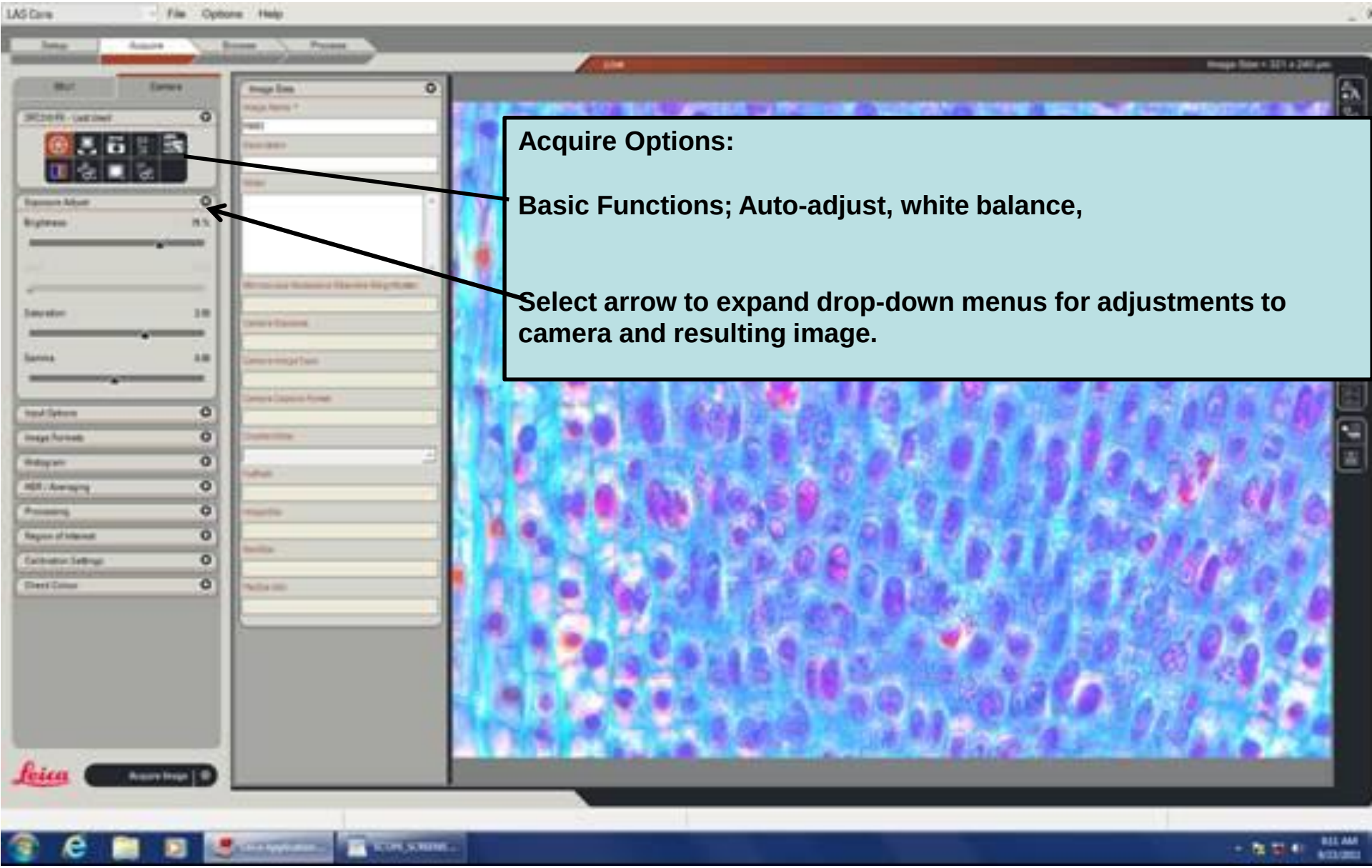
Microscope: LeicaDMI, Camera Controls



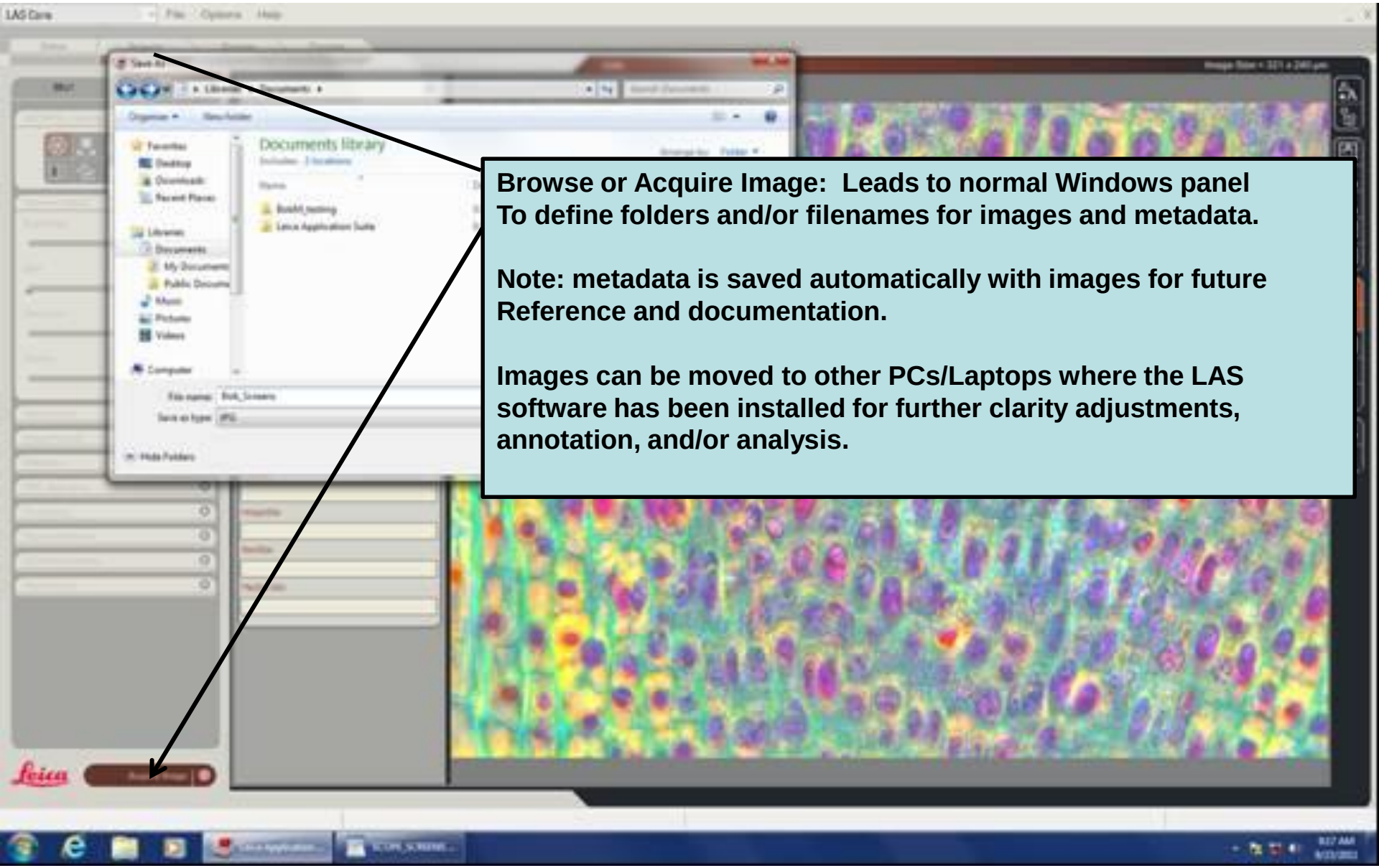
Microscope: LeicaDMI, Acquire, Save-as Dialog



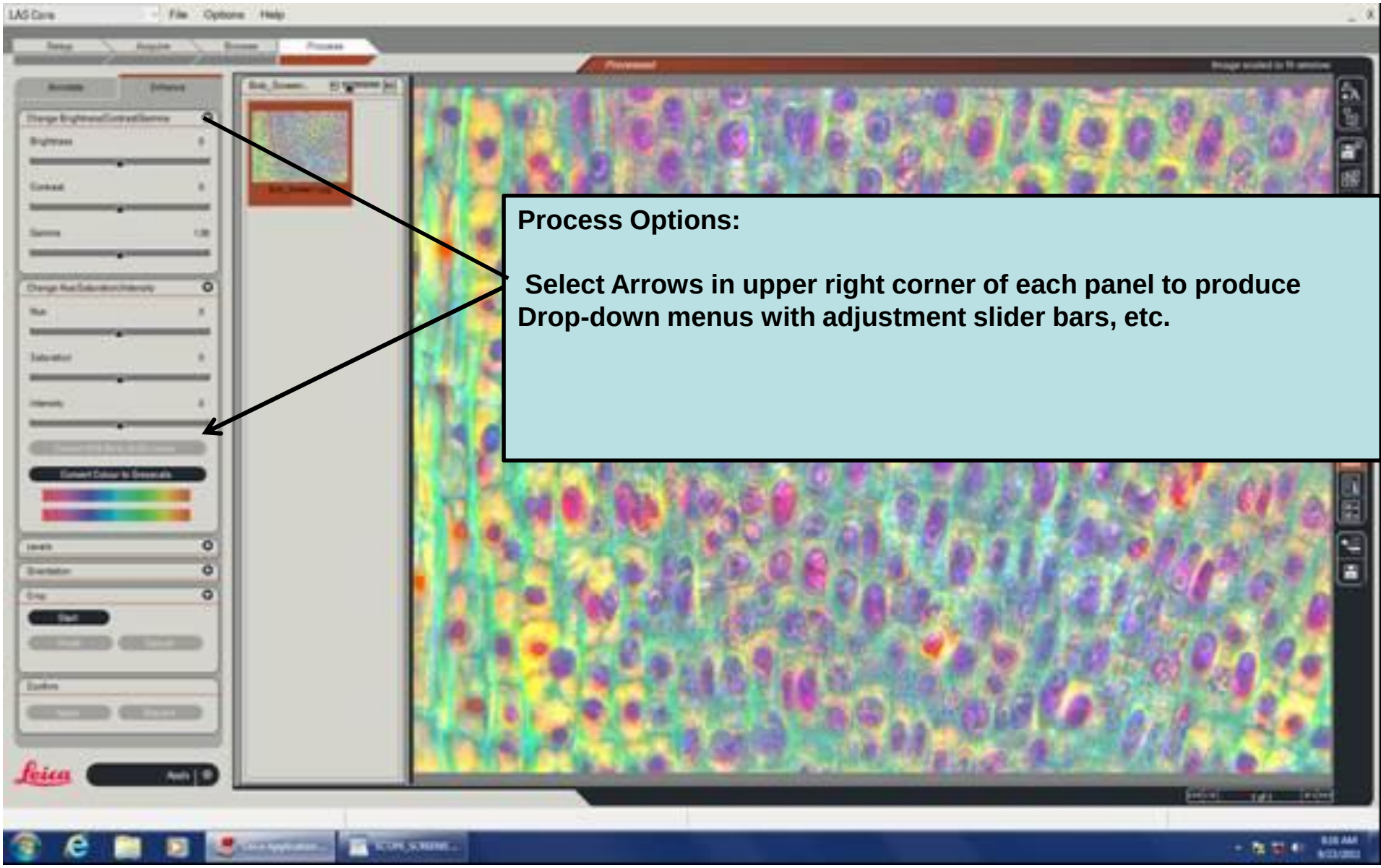
Microscope: LeicaDMI, Camera-Acquire Screen



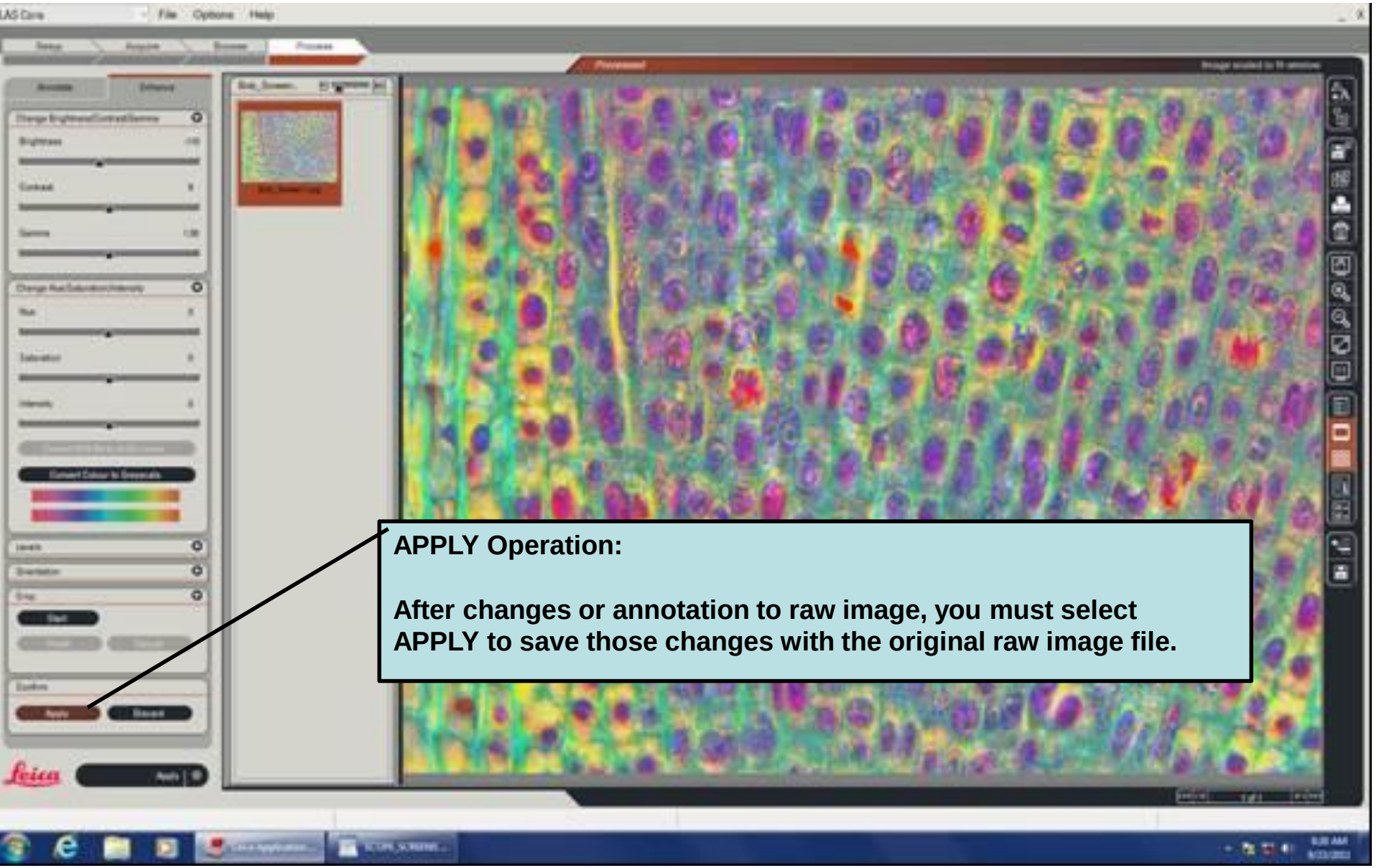
Microscope: LeicaDMI, Acquire Image-Save-As



Microscope: LeicaDMI, Process Image



Microscope: LeicaDMI, Process Image, Apply to Save



Microscope: LiecaDMI, Export Images

1: If necessary, click to select the *File* option on the *Image Destination* panel.

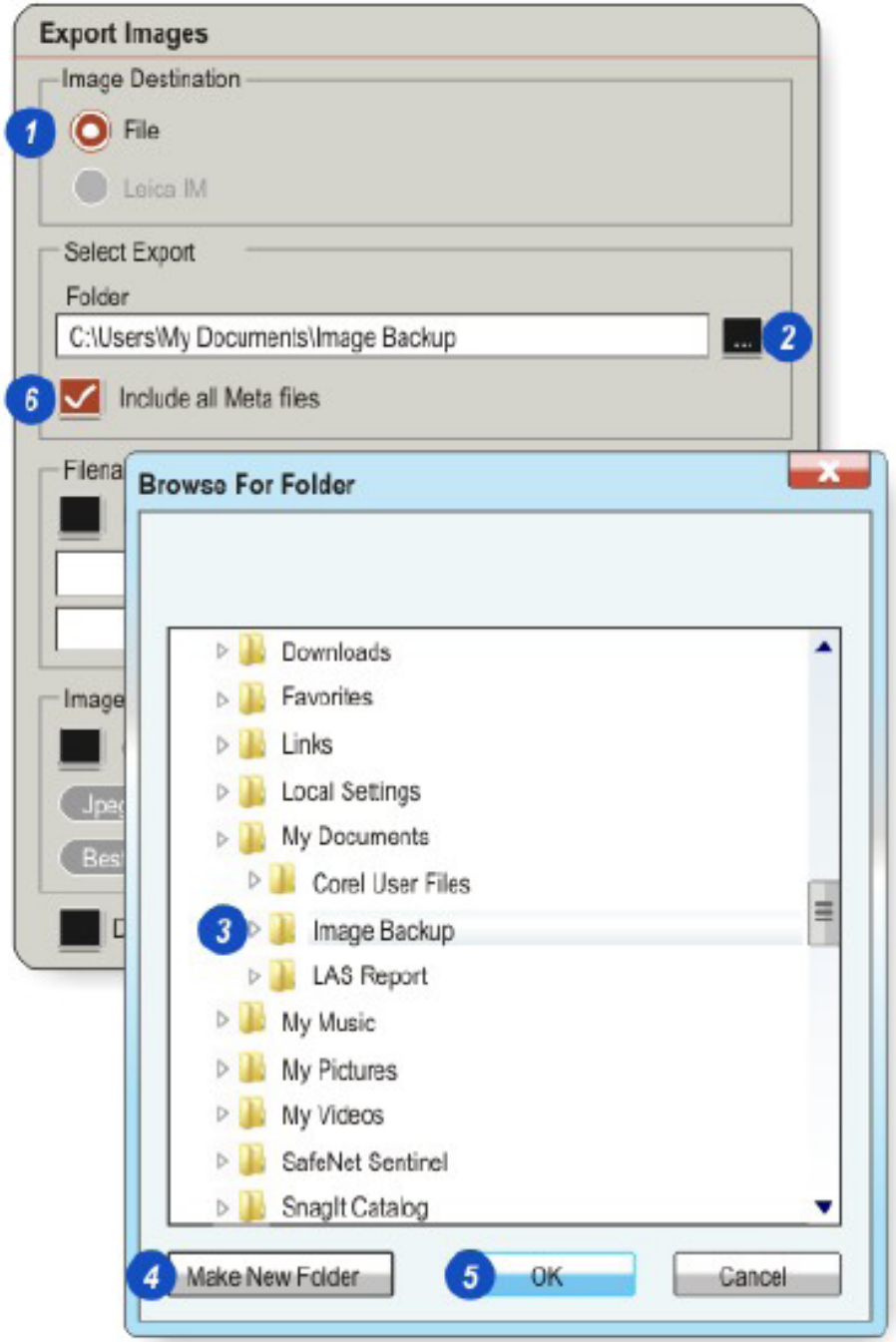
2: To change the destination folder, click on the *Browse for Folder* button and...

3: ...navigate to the destination folder. Create a new folder if required **(4).**

5: Click the *OK* button.

6: To include all of the *Meta Data* with the image, click to enable the *Include all meta files* check box.

Continued 88



Microscope: LeicaDMI, Setup, Nosepiece, Air/Immersion

Some objectives can be used both in air and also immersed - in water or oil. These so-called Combi (Combination) objectives can be tagged so that when they are selected the user is given a warning that immersion can be an option.

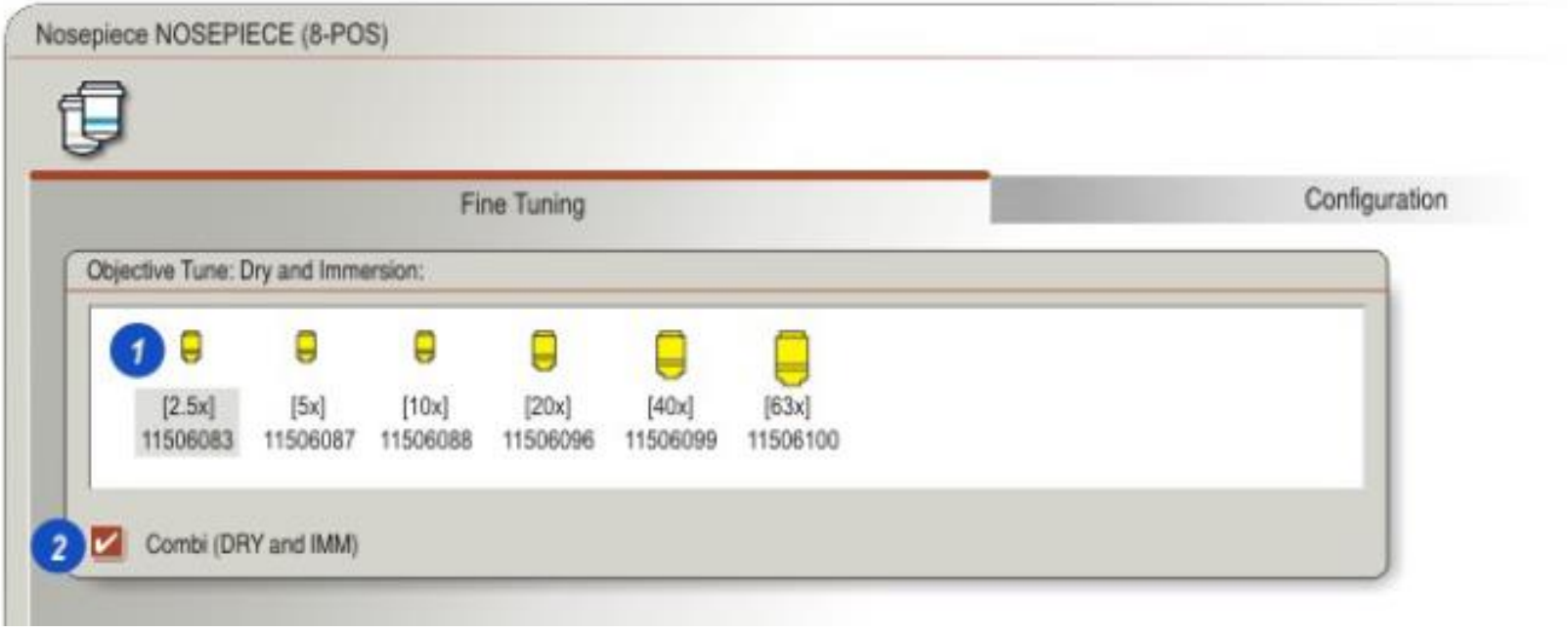
1: Click on the Objective Icon to select it.

2: Click the check box to enable (ticked) or disable the Combi tag.

If either a tagged Combi or Immersion only objective is selected on the Acquire > Mic 1 tab, the button will flash to warn the user.

3: Immersion only objectives are marked with a 'filled' teardrop icon whereas...

4: ...Combi objectives are marked with an outlined teardrop.



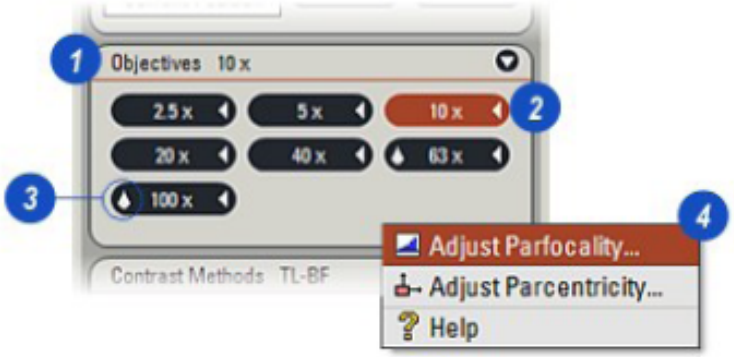
Microscope: LeicaDMI, Nosepiece Control, Dry/Immersion

1: All learned in objectives are displayed in the control window.

2: The current objective in the light path is highlighted on the control.

3: Objectives which are valid for the selected contrast method are marked with a triangle.
Immersion objectives are marked with a black drop.

Objectives which have been learned in as combi-objectives (module 'Fine tuning') are marked with a clear drop.



The selected objective blinks if you are changing the mode from *DRY* to *IMMersion* and vice versa. The stage is lowered and you have to confirm the change of mode with an additional mouse-click.

4: *Parfocality* can be adjusted using the context menu of the *right* mouse button. This will start the *Parfocality* wizard **(5)**. It is recommended that the *Parfocality* of all listed objectives is adjusted if new objectives are learned in.

To learn in new objectives please go to the *Workflow*

Each objective button shows small status icons:

◀ *Marks an objective, if it is valid for the currently selected contrast-method.*

💧 *Marks Immersion-Objectives (Oil, Water, Glycerine).*

💧 *Marks Combi-Objectives (for use in both modes, Immersion- and Dry-Mode).*

Starts the Parfocality Wizard

Microscope: LeicaDMI4000 Filter Cubes

Filter Cube: TX2 ET

Description:	Filter system TX 2 for Texas Red/green excitation, excitation filter: BP 560/40, dichromatic mirror: 595, suppression filter : BF 645/75
Excitation Filter (blue):	BP 560/40
Dichromatic Mirror (green):	595
Suppression Filter (red):	BP 645/75
Filter Set:	-
LED Wavelength:	-
Ordernumber size S:	11504180
Ordernumber size K:	11504170

Filter Cube: A4 ET

Description:	Filter system A4 for UV excitation, excitation filter: BP 360/40, dichromatic mirror: 400, suppression filter: BP 470/40
Excitation Filter (blue):	BP 360/40
Dichromatic Mirror (green):	400
Suppression Filter (red):	BP 470/40
Filter Set:	-
LED Wavelength:	365
Ordernumber size S:	11504181
Ordernumber size K:	11504162

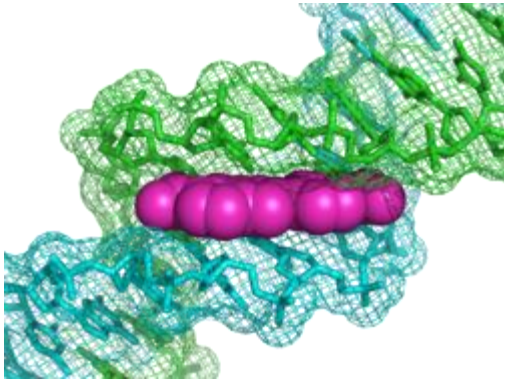
Microscope: LeicaDMI4000 Filter Cubes (cont)

Filter Cube: L5 ET

Description:	Filter system L5 for blue excitation, excitation filter: BP 480/40, dichromatic mirror: 505, suppression filter 527/30
Excitation Filter (blue):	BP 480/40
Dichromatic Mirror (green):	505
Suppression Filter (red):	527/30
Filter Set:	-
LED Wavelength:	-
Ordernumber size S:	11504176
Ordernumber size K:	11504166

Microscope: Fluorescence; DAPI

DAPI or 4',6-diamidino-2-phenylindole is a fluorescent stain that binds strongly to A-T rich regions in DNA



When bound to double-stranded DNA DAPI has an absorption maximum at a wavelength of 358 nm (ultraviolet) and its emission maximum is at 461 nm (blue). Therefore for fluorescence microscopy DAPI is excited with ultraviolet light and is detected through a blue/cyan filter. The emission peak is fairly broad[2] DAPI will also bind to RNA, though it is not as strongly fluorescent. Its emission shifts to around 500 nm when bound to RNA.[3

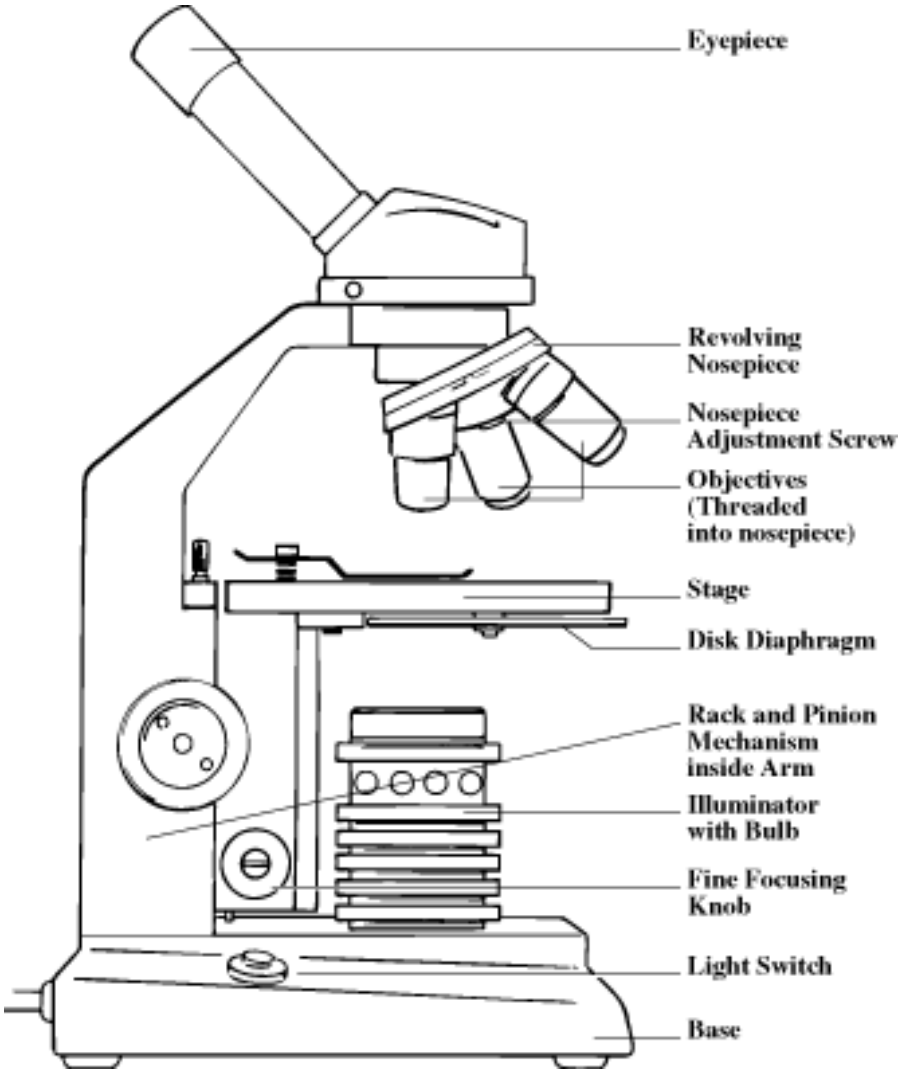
DAPI's blue emission is convenient for microscopists who wish to use multiple fluorescent stains in a single sample. There is some fluorescence overlap between DAPI and green-fluorescent molecules like fluorescein and green fluorescent protein (GFP) but the effect of this is small. Use of spectral unmixing can account for this effect if extremely precise image analysis is required.
Outside of analytical fluorescence light microscopy DAPI is also popular for labeling of cell cultures to detect the DNA of contaminating mycoplasma or virus. The labelled mycoplasma or virus particles in the growth medium fluoresce once stained by DAPI making them easy to detect.

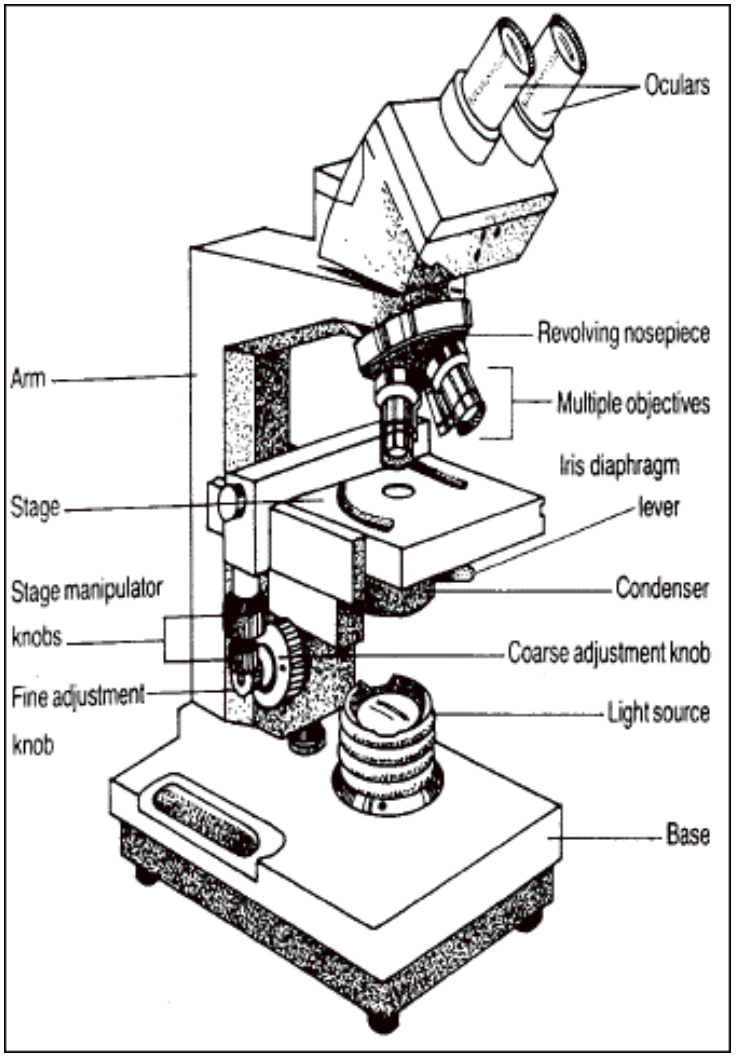
Microscope: Fluorescence; Texas Red

Texas Red or sulforhodamine 101 acid chloride is a red fluorescent dye, used in histology for staining cell specimens, for sorting cells with fluorescent-activated cell sorting machines, in fluorescence microscopy applications, and in immunohistochemistry.[1][2] Texas Red fluoresces at about 615 nm, and the peak of its absorption spectrum is at 589 nm. The powder is dark purple. Solutions can be excited by a dye laser tuned to 595-605 nm, or less efficiently a krypton laser at 567 nm. The absorption extinction coefficient at 596 nm is about 85,000 $M^{-1}cm^{-1}$.

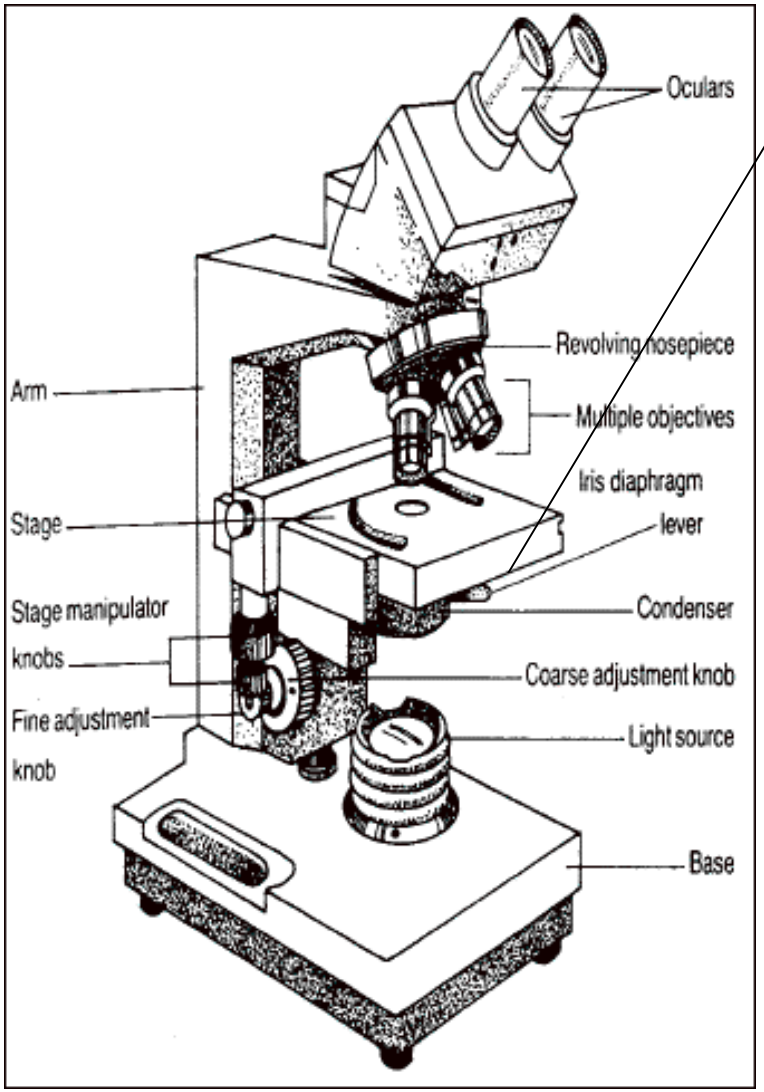
A protein with the Texas Red chromophore attached can then itself act as a fluorescent labelling agent; an antibody with a fluorescent marker attached will bind to a specific antigen and then show the location of the antigens as shining spots when irradiated. It is relatively bright, and therefore can be used to detect even weakly expressed antigens. Other molecules can be labeled by Texas Red as well, e.g., various toxins. The dye dissolves very well in water as well as other polar solvents, e.g., Dimethylformamide, acetonitrile.
Texas Red, attached to a strand of DNA or RNA, can be used as a molecular beacon for highlighting specific sequences of DNA. Texas Red can be linked with another fluorophore. A tandem conjugate of Texas Red with R-phycoerythrin (PE-Texas Red) is often used. Fluorophores, like Texas Red, are commonly used in molecular biology techniques like quantitative RT-PCR and cellular assays.[3

Student Microscopes, examples





Student Microscope; Typical



Iris Diaphragm lever,
9am closed
12noon, open

Microscopes: Cleaning and Phase Filter Procedures

1. Cleaning Objectives, Filters, Lens

- **Remove objective, use ring not objectives to rotate for removal**
- **Rub lightly with lens tissue first**
- **Remove an eyepiece and hold at 45 degree angle from objective to inspect for dust or other materials**
- **Use Cotton swaps or Q-tips and Ethyl Alcohol (90-95%), rub from center out in a spiral motion, rotate and replace swap as needed when stained or fluffy. "Carl's bottle" is in lab setup area.**
- **Check cleaning with a prepared standard slide (ex Diatoms), specimen slide cover down, always toward the objectives**

2. Phase ring/filter alignment

- **<u>Make sure condenser and phase ring slot is pulled fully forward and in locked position</u>**
- **Remove filter guide and clean filters if needed**
- **Insert a clean prepared slide with no stain**
- **Adjust condenser light intensity to lower setting to avoid glare**
- **Remove right eyepiece entirely, observe Phase filter with respect to circular ring of normal objective.**
- **Adjust end screws on Phase filter guide until rings are centered on each other, should end up with two concentric rings.**

Microscope: Cleaning, Objectives, from MicroscopeWorld website

Cleaning Objectives

In order to determine which of your objective lenses need cleaning, take a clean blank glass slide and put it under your microscope. Once the microscope is focused you should be able to move the slide and determine if the visible dust is moving with the slide or staying in the same place (which means the dust is on the objective lens).

When using immersion oil for microscopy, the oil should always be cleaned from microscope objective lenses immediately after use. This can be done with a kimwipe of piece of lens paper, no cleaning solutions are needed. Occasionally dust may build up on the lightly oiled surface so if you wish to completely remove the oil then you must use an oil soluble solvent.

For the Cargille Type A or B immersion oil that we sell, you can use Naptha, Xylene, or turpentine (use very small amounts on the kimwipe). Do not use water, alcohol or acetone as the oil is insoluble to these solvents.

To remove other oily substances, we recommend using the detergent called Wisk and prepare a solution of 1 part Wisk to 100 parts water.

If immersion oil was not cleaned off an objective after use and has harded on the objective, moisten a piece of lens paper with a small amount of distilled water and hold it against the lens for a few seconds to dissolve the oil. If that does not work, try alcohol. Isopropyl alcohol is one of the best solvents but it must be at least 90%+ pure (do not use rubbing alcohol, 30% water). Everclear which is grain alcohol (you must be 21!) can also be used but it doesn't do as well in dissolving crud. If you have something like Balsam stuck on the lens, you must resort to a stronger solvent like Acetone or Xylene. Acetone should never be put on plastic parts, as it will dissolve most paints and plastic. After using solvents be sure to clean the objective again with standard distilled water to ensure that you have removed all the solvents from the microscope objective.

ALIGNMENT OF A COMPOUND, UPRIGHT MICROSCOPE

(written by Nancy Kruger, Feb 2008)

1. **Adjust the eyepieces/oculars so they are at the midpoint setting, indicated by a line or matching a dot to a line. Adjust the eyepiece spread to match the distance between your eyes.**

1. **Place a slide on the stage and focus on it with the 10x objective.**

1. **Close the field diaphragm/lens on the base of the microscope, if that adjustment can be made.**

1. **Adjust the condenser height with the condenser knob, until you see a distinct polygon in the field of view.**

1. **Using the condenser centering knobs below the stage, center the bright area in the field of view. By opening up the field lens slightly, you can fine tune the centering.**

1. **Completely open the field diaphragm/lens. Adjust the condenser aperture setting to give the best image.**

1. **Change objectives to produce different total magnifications. Remember that your total magnification is eyepiece magnification (10x) times the objective/lens magnification.**

SET UP A STEREO DISSECTING MICROSCOPE TO BE *PARFOCAL*

(written by Nancy Kruger, Feb 2008)

1. **Adjust the eyepieces/oculars so they are at the midpoint setting, indicated by a line or matching a dot to a line. Adjust the eyepiece spread to match the distance between your eyes.**

1. **Place a specimen on the stage with the appropriate illumination (top/episcopic, or transmitted/diascopic illumination or both)**

1. **Using the lowest magnification setting, focus on a distinct area of the specimen. Use the coarse focus knobs to set the focus.**

1. **Change to the highest magnification using the magnification set knob. Use the coarse focus knobs to adjust to the best focus.**

1. **Change back to the lowest magnification using the magnification set knob. DO NOT TOUCH THE COARSE FOCUS KNOBS!!**

1. **Block off your left eye using your hand or piece of paper. Adjust the right eyepiece to produce the best focus possible for you by twisting the top portion. Switch eyes and repeat the process.**

1. **Check your settings by "zooming" between the lowest and highest magnifications. The image should stay in focus over the entire range. If not, repeat the process. You may need minor focus adjustments to see detailed structures at various planes, but no major focus adjustments.**

Microscopy: Optical Maintenance - Lens Cleaning

http://www.flinnsci.com/Sections/Biology/microscope.asp

1. All lenses are made of coated, soft glass and can be easily scratched. Lenses should be treated with care. Never use a hard instrument (such as a dissecting needle, etc.) or abrasive to clean a lens.

2. For the top of the eyepiece and the ends of the objectives, clean as follows: Use a camel's hair brush and an aspirator to remove all loose dust and dirt. Then moisten the end of a Q–tip™ with lens cleaning solution. Keep the other end of the Q–tip dry. Clean the optical surface with the moist end of the Q–tip using a circular motion. Dry the surface with the dry end of the Q–tip using a circular motion. Use an aspirator or similar air source to remove any lingering dirt particles.

3. Immersion oil should always be wiped from all surfaces immediately after use. In the event immersion oil is allowed to harden, moisten a piece of lens paper with a small amount of xylene and use this to redissolve and remove the hardened oil. Note: Xylene may leave a film on the lens and may dissolve the cement used to seal the immersion objective. To prevent this, always moisten a second lens paper with alcohol and use it to remove any residual xylene. Repeated use of xylene will destroy lens coatings.

4. To determine which lens surfaces need cleaning, focus the microscope on a clean slide free of all dust. Moving the slide will determine if the visible dust is on the slide. Rotating the eyepiece will establish if dirt is on the eyepiece. After loosening the retaining screw (if there is one) rotate the eyepiece in a circular fashion. If any dirt rotates, the eyepiece needs cleaning. Remove the eyepiece and clean it. Be careful not to damage any pointers. Clean the eyepiece on both ends in the same fashion described above for the objectives. When the eyepiece is thoroughly cleaned and dried, replace it and refocus the microscope.

Microscopy: Objective Lens Cleaning

http://www.flinnsci.com/Sections/Biology/microscope.asp

1. Moving other parts will likewise help determine where dirt exists. Dirt on mirrors can be detected by moving the mirror while looking through the microscope. Rotating objectives will establish if dirt is on a specific objective. Does the specific dirt move or stay when objectives are rotated? Dust on a condenser lens can be detected in a similar fashion. Substage condenser lenses and mirrors should be cleaned with lens paper.

2. If the lower exterior surface of an objective has been cleaned and dirt still persists, it may be necessary to clean the inside surfaces of the objective. To do this the objective lens should be carefully removed from its nosepiece mounting. The objective lenses are threaded into the nosepiece and must be carefully removed for cleaning. This should be done with the utmost care to avoid stripping the threads and/or scratching the finish on the objective. Apply a firm, even pressure on the serrated top of the objective while holding the nosepiece from turning. A padded wrench or leather strip may prevent scratching of the objectives. Do not overtwist. If the objectives seem too difficult to loosen with a small wrench, call a microscope repair technician.

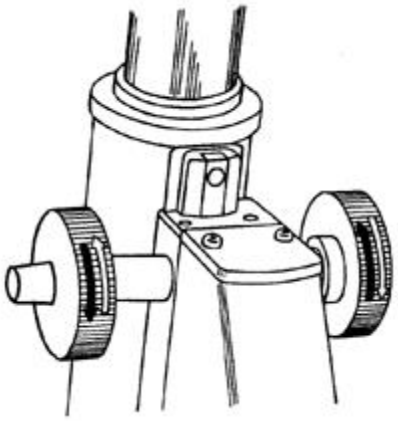
3. Clean the inside of the objective lens just like the outside, try to avoid lint and dust from getting back inside the objective. An aspirator is very helpful when working on the inside of an objective lens.

4. If after cleaning all surfaces carefully, dirt is still found in the field of view, it is possible that dirt is between the lenses of the objective. This dirt cannot be removed without disassembling the compound lens in the objective. Do not attempt this—call your microscope repair technician.

5. ***Final Inspection of Objectives:*** *After cleaning it may be useful to* ***check the overall operation by inspecting the objective lens using another microscope on a low power objective.*** *Most objective lenses (extreme bottom of the lens) can be removed from the objective mount by unscrewing the cover or retaining sleeve with fingers or plier tools. To avoid scratching the surfaces with pliers, use a cloth between the tool and the objective. Put the objective lens on a clean class slide under another scope and focus to inspect for dust, spots, cracked lenses, or other debris.* ***(Morrison, Mar 2008).***

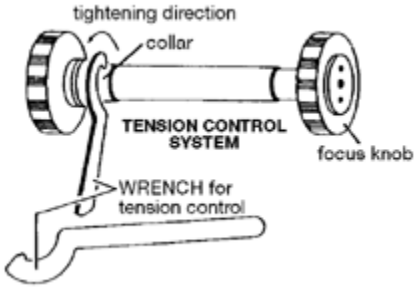
Microscopy: Mechanical Adjustments

http://www.flinnsci.com/Sections/Biology/microscope.asp



Nosepiece Adjustment:

The nosepiece can likewise become too loose or too tight. There is usually an adjustment mechanism on the nosepiece. It is often as simple as loosening or tightening the slot-headed screw in the middle of the nosepiece. Sometimes there is a two–hole ring nut. This requires using a round nose pliers like a wrench to loosen or tighten the collar. On some microscopes the stage must be removed to gain access to the nosepiece adjustment. Be sure to check the manual for your specific microscope.



Focus Knob Adjustment:

Tension of the coarse and fine adjustment knobs can be adjusted. Again, various mechanical methods have been designed. Some microscopes are adjusted by simply turning the knobs on each side of the microscope in opposite directions to tighten or loosen as desired. Others have adjustable collars on the shaft and require the use of specially designed collar–wrenches or allen wrenches to make the adjustments. Moving the collars out usually provides more tension. If your microscope requires unique collar–wrenches, obtain these from your microscope supplier.

Microscope: Local Services, Repairs, Bulb Replacement

Bulb Replacement Orders: Per GN 3/31/11
Archway Lighting Supply Incorporated
(314) 535-1314 2739 Washington Ave, St Louis, MO 63103

1. Call or Go to the archway website: http://www.bfmgraphics.com/al/major_manufacturing.htm
2. Go to the products section or any area and select the phillips hotlink
3. On the Phillips site, select product, then professional lighting http://www.Ecat.Lighting.Philips.Com/l/professional-lamps/ep01_gr_us_lp_prof_atg/cat/us?Omnpg=lamps-professional&lptype=lamps&navaction=pop&navcount=0&omnpc=ep01_gr_us_lp_prof_atg&isleftnav=false
4. Locate type of bulb : compact, fluorescent; halogen…

From: Naumann, Virginia L.
Sent: Thursday, July 12, 2012 9:35 AM.
Subject: RE: Microscope repair services, local?

Hitchfel: 2333 S. Hanley Road St. Louis, Missouri 63144 T 800.242.3501

Spakowski Microscope Service: 7739 Brookline Ter, Saint Louis, MO 63117 T (314) 644-6560

Microscopy – Education, Tutorials, FAQ
http://www.olympusmicro.com/primer/index.html

Olympus Microscopy Resource Center: Introduction to Microscopy - Microsoft Internet Explorer

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Back Search Favorites

Address http://www.olympusmicro.com/primer/index.html Go

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Introduction to Optical Microscopy, Digital Imaging, and Photomicrography

This treatise on Microscopy is divided into several sections that are available through the links displayed immediately to the left (in the darker boxes) and below. In order to print the entire document, you must download each link independently, send the file to your printer, and put the results together.

In the Bibliography, we have included links to other works on optical microscopy and our section on Web Resources contains links to other microscopy sites on the Internet. This material is targeted for educational purposes only, and is not available to be posted on remote websites (either commercial or educational) or distributed in any electronic format.

Frequently Asked Questions - Mortimer Abramowitz, senior microscopist at Olympus America, Inc., answers the 50 most commonly asked questions about microscopy and photomicrography.

Physics of Light and Color - Visible light represents only a small portion of the entire electromagnetic spectrum of radiation that extends from high-frequency gamma rays throu X-rays, ultraviolet light, infrared radiation and microwaves to very low frequency long-wavelength radio waves. The complex phenomenon of visible light is classically discussed terms of rays and wavefronts. Starting with the nature of electromagnetic radiation, a wide variety of topics are covered in this section, including refraction, reflection, diffraction, interference, birefringence, polarization, primary colors, human vision, mirrors, prisms, beamsplitters, laser systems, geometrical optics, filtration, color temperature, and the spe of light.

Anatomy of the Microscope - A thorough discussion of the elements that comprise modern microscopes and theories behind important concepts such as magnification, image formation,

60x Plan Apochromat Objective

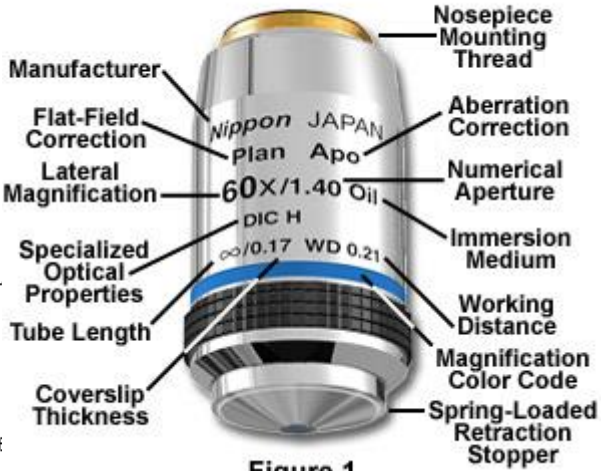

Figure 1

Internet

Microscopy: Other Procedures

1. “Koehler”, Proper Specimen illumination Adjustment

- Place prepared slide specimen on stage, center 10x objective
- Close down/reduce light source diaphragm in base
- Lower condenser until diaphragm is in focus
- Center image using condenser centering screws
- Open diaphragm to edge of field, fine focus and open further to just clear field
- Adjust contrast using condenser diaphragm
- Remove eyepiece and check that 75% of visible aperture is filled with light