

# SLi6Pro Inverted Fluorescence Microscope



Version 2.0

# INTRODUCTION

LAXCO has been a leading provider of high precision, cutting edge optical instruments and microscopes for over 30 years. Our products span a complete range of applications including education, clinical, life science research, and industrial. Our commitment to engineering excellence, breakthrough innovations, and cost effective solutions, makes us one of the most reliable suppliers in the industry. Our products come with a heritage of technical strength, manufacturing discipline, and a prominent reputation of advanced engineering. We currently hold over 15 patents for lighting, design, and technology and our designs incorporate numerous innovative features, address issues others may overlook, and come with a strong industry-proven reputation. Product development is based in Washington State with electrical, mechanical, and optical engineers on site.

Introducing the new enhanced SLi6PRO™ inverted microscope designed as a high quality fluorescence microscope, ideal for every research need from the very basic to the high performance applications. Laxco has improved on the original design of the SLi6 by introducing a completely redesigned fluorescence light path. The original SLi6, with its innovative design took a Giant Leap Forward in Fluorescence Microscopy and now, the SLi6PRO™'s enhance SeBaLiT™ design is changing the path to seeing Florescence.

## KEY FEATURES

### **FILTER TECHNOLOGY**

Improves performace across all colors, boosting Red emission signal. Crosstalk reduction provides better color separation and darker Black

### **INFINITY OPTICAL SYSTEM**

Spherical and chromatic corrected infinity optical system providing excellent optical quality in any application

### **LARGER FIELD OF VIEW**

The Field of View has been increased to 22mm through the eyepieces

### **ERGONOMIC DESIGN**

Compact stand design with focus controls placed low on the microscope stand to provide optimal ergonomics

### **LIGHT CUBE AND EXCITATION LED IDENTIFICATION**

Light cubes and excitation LED are identified allowing identification by the SeBaLiT™ software

### **LED ILLUMINATION**

Long life LED illumination in both transmitted and fluorescence modes

### **PHASE CONTRAST ILLUMINATION**

Phase contrast illumination system provides excellent contrast for viewing of live cell/tissue culture samples

### **MULTI-ILLUMINATION CONTRAST (MIC)**

A new approach to microscopy that combines multiple contrast methods into a simple easy-to-use system that's almost entirely digital

### **SINGLE & MULTI-ILLUMINATION MODE**

Two modes of operation for more versatility

### **ATTACHABLE MECHANICAL STAGE**

The optional mechanical stage provides precise sample control at higher magnifications and s user installable with no tools required

### **ERGONOMIC DESIGN**

Compact stand design with focus controls placed low on the microscope stand to provide optimal ergonomics

### **EMISSION FILTERS**

One multi-wavelength and three single wavelengths

### **ENHANCED DARKFIELD CONTRAST**

Provides a simple means to locate your focal plane while remaining in fluorescence mode

### **SEBALIT™ EPI-FLUORESCENCE ILLUMINATION TECHNOLOGY**

New fluorescence illumination technology utilizing a cross-beam splitter creating the same focal plane and equal distance for all channels

### **NO DARKROOM REQUIRED**

A new approach to microscopy that combines multiple contrast methods into a simple easy-to-use system almost entirely digital

### **SEBALIT™ SOFTWARE**

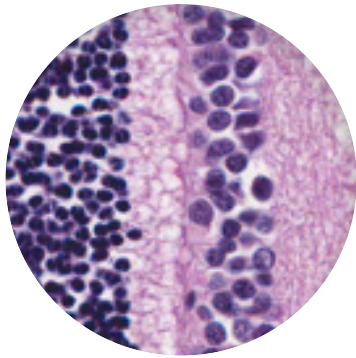
Allows control of all illumination through a computer

# APPLICATIONS

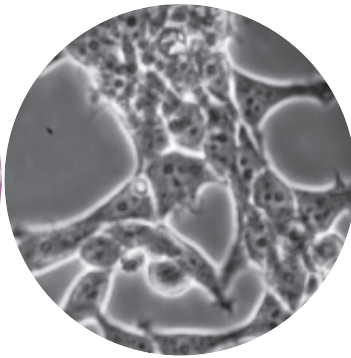
Live Cell Culture Analysis  
Bacteriology  
Microbiology  
Neurology and Neuroimaging  
Tissue Culture Studies

Drug Discovery  
Development Biology  
Transgenics  
Biotechnology  
Diagnostics Fungal Cultures

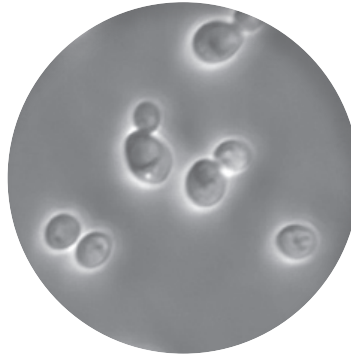
# CONTRAST METHODS



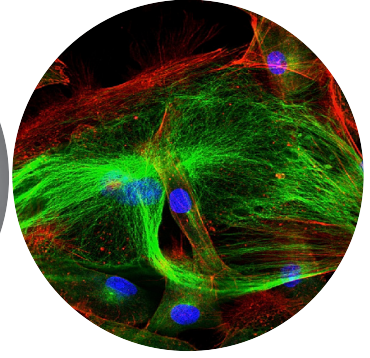
**Brightfield**  
Ideal for stained samples



**Phase Contrast**  
View unstained live cells



**Enhanced Darkfield Contrast**  
The perfect solution for locating the focal plane or area of interest when imaging in fluorescence



**Fluorescence**  
Up to 3 fluorescence channels

# MULTI-ILLUMINATION CONTRAST (MiC)<sup>TM</sup>

A new approach to microscopy that combines multiple contrast methods into a simple easy-to-use system, controlled digitally through a membrane switch located on the front panel of the microscope; users can turn on any combination of illumination techniques maximizing the specimen details observed.



# SEBALIT™ TECHNOLOGY

Laxco SeBaLiT™ Technology leaps forward in simplifying a fluorescence microscope by removing a majority of mechanical moving parts, while taking advantage of wavelength specific LEDs coupled with low signal loss. Combined with a multi-band pass filter set, users can achieve rapid switching between channels for real-time viewing of their samples.

Laxco's patent pending approach is the first of its kind that delivers this level of functionality and image quality into a traditional inverted fluorescence microscope. Combined with single bandpass filters, users can produce publication quality photos. The innovated design (patent pending fluorescence module is located directly below the objective nosepiece reducing the illumination for greater efficiency).

The development of new filter technology has led to a significant improvement in performance across all colors, particularly in red emissio signals. This new technology covers a wider range of red dyes in the color spectrum, producing a more vibrant and accurate representation of red hues. Additionally, cross-talk reduction between colors provides better color separation, creating a more realistic and lifelik image. These advancements in filter technology have also led to darker black levels, further enhancing the overall visual quality of images and videos. Overall, the development ofth new filter technology is a significant ste forward in improving the cisual quality ( ditypsaross a variety of applications.

## SIMULTANEOUS VIEWING OR IMAGING

Simultaneous viewing or imaging of you specimens removes registration issue that can arise by changing microscop components on traditional fluorescenc microscopes.

## WAVELENGTH-SPECIFIC LED ILLUMINATION

Adjustable wavelength specific LED intensity to create the perfect ratio between background and signal providing better signal-to-noise ratio, more precise excitation.

## LIGHT PATH

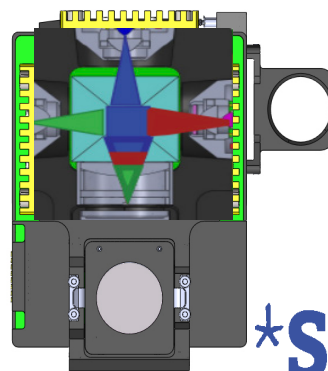
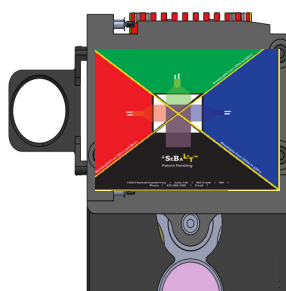
Minimal moving parts. All three light paths converge into a single specially engineered and designed prism block located just below the objective turret.

## CHANNEL SELECTION

Rapidly switch between excitation light sources by selecting the appropriate LED. Select a single, two or three channels for easy comparison.

## LIMITED LIGHT LOSS

95% light transmission through the SeBaLiT™ specially designed prism.



# ILLUMINATION

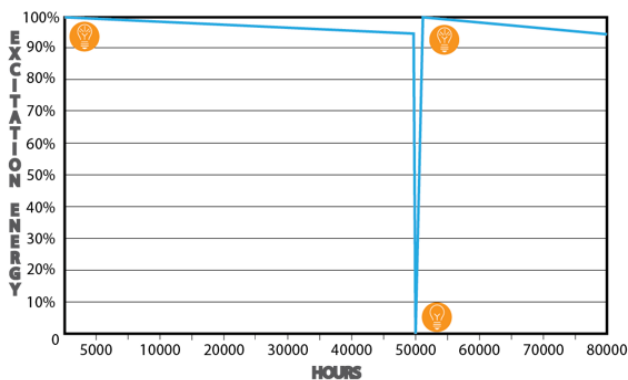
# KEY FEATURES

## LED FLUORESCENCE

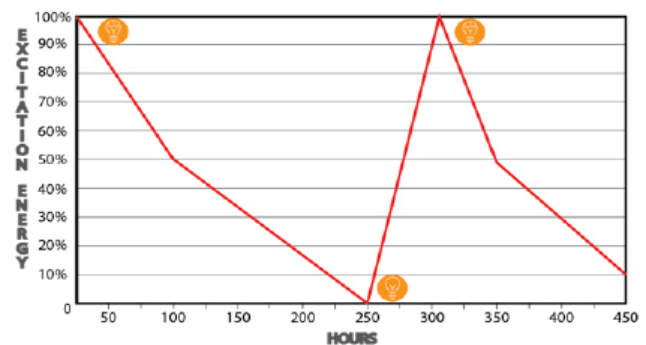
- 50,000-hour life span
- No alignment required
- LED wavelength specific to filter set
- Adjustable light intensity

- Blocks out 90% of unwanted light
- Coatings do not break down over time
- Superior signal to noise ratio
- High signal to noise ratio
- Stable light excitation energy
- No warm-up or cool-down time
- Produces no harmful UV light

LED Intensity over 50,000 hours



Mercury Bulb over 250 Hours



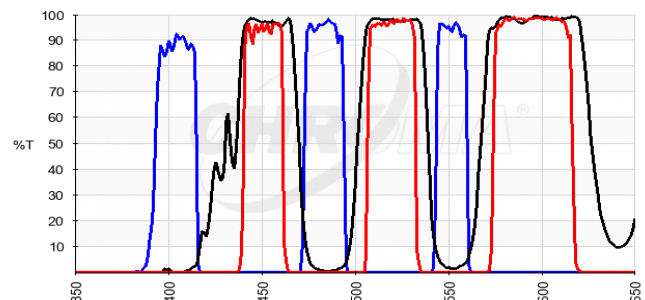
LED's excitation energy degrades less than 5% over a lifetime of 50,000 hours; where mercury drops off 50% in the first 100 hours.

**NOTE: With wavelength specific LED, the filters have no unwanted light to block and are ideally suited for imaging at single wavelength.**

# FILTERS

## HARD-COATED FILTERS

Laxco uses hard-coated filters to provide superior performance and durability. Unlike more traditional soft coated filters which only block out 60% of the unwanted light and break down over time, the hard-coated filters block out 90% of the unwanted light, and does not break down over time under any wavelength of light. This greater efficiency produces a superior signal to noise ratio.



STANDARD SLI6PRO EMISSION SPECTRUM

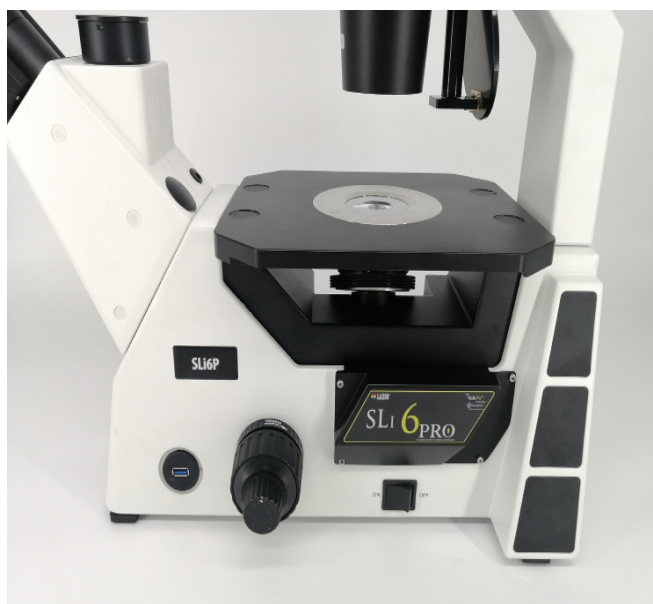
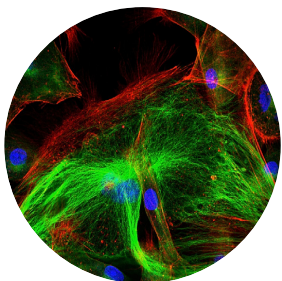
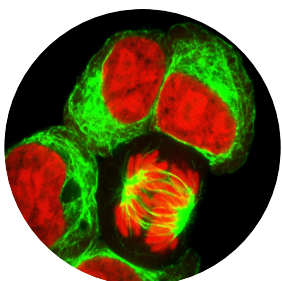
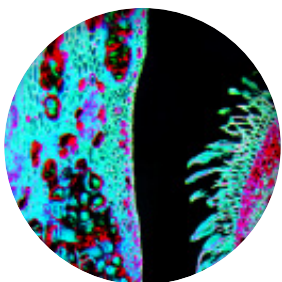
**NOTE: Best signal to noise ratio and image resolution can be achieved with semi-apo fluorite objectives and wavelength-specific LED.**



# EPI-FLUORESCENCE

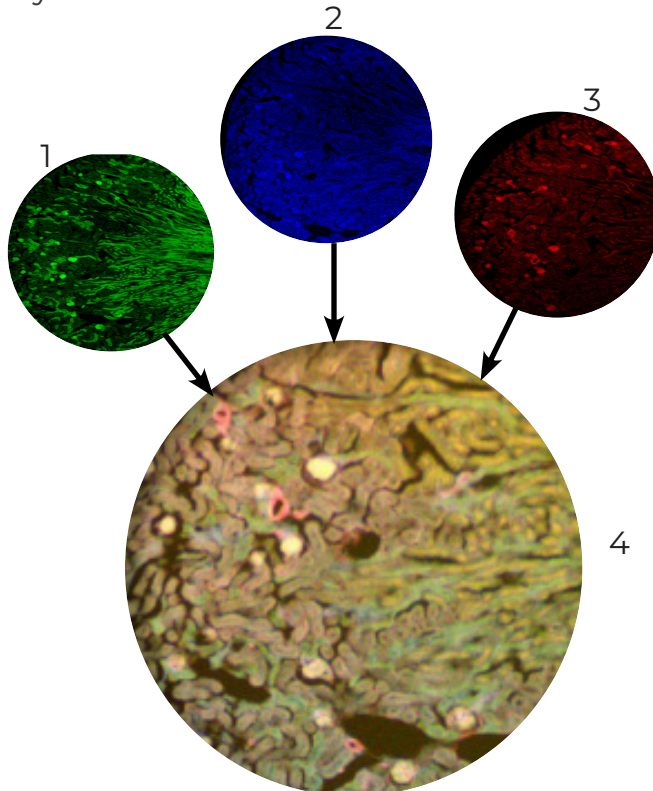
## INDIVIDUAL CHANNEL VIEWING

Image or view each channel separately using a wavelength-specific LED with matching EX/EM bandpass filter set.



## MULTI-CHANNEL VIEWING

No manual overlay or PC software is required to view a multi-channel image. No need to capture each channel individually. All channels can be viewed directly, in real-time on the microscope and/or camera. Using our latest SeBaLiT™ software virtually remove any cross talk across fluorescent channels.



Mouse Tissue Section as viewed through SeBaLiT™ under 10X Plan Fluorite objective.  
1. GFP 2. DAPI 3. RFP 4. Multichannel Image

# ENHANCED DARK

## OBLIQUE ILLUMINATION

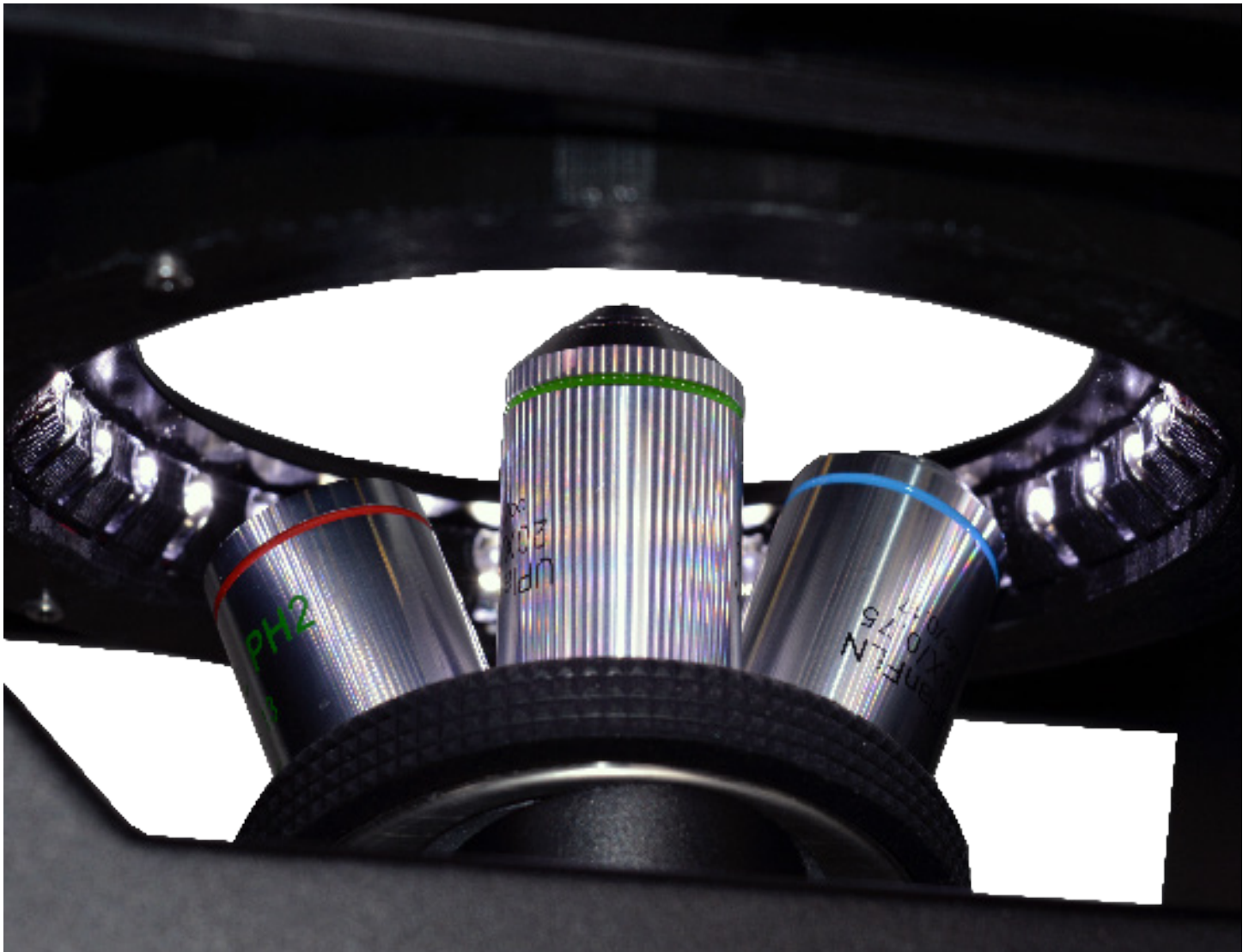
360-degree LED ring, creates Enhanced Darkfield Contrast.

## SEARCHING

When in fluorescence operation with darkroom shield in place, use Enhanced Darkfield Contrast to find the focal plane and area of interest before switching to fluorescence mode.

## OVERLAY

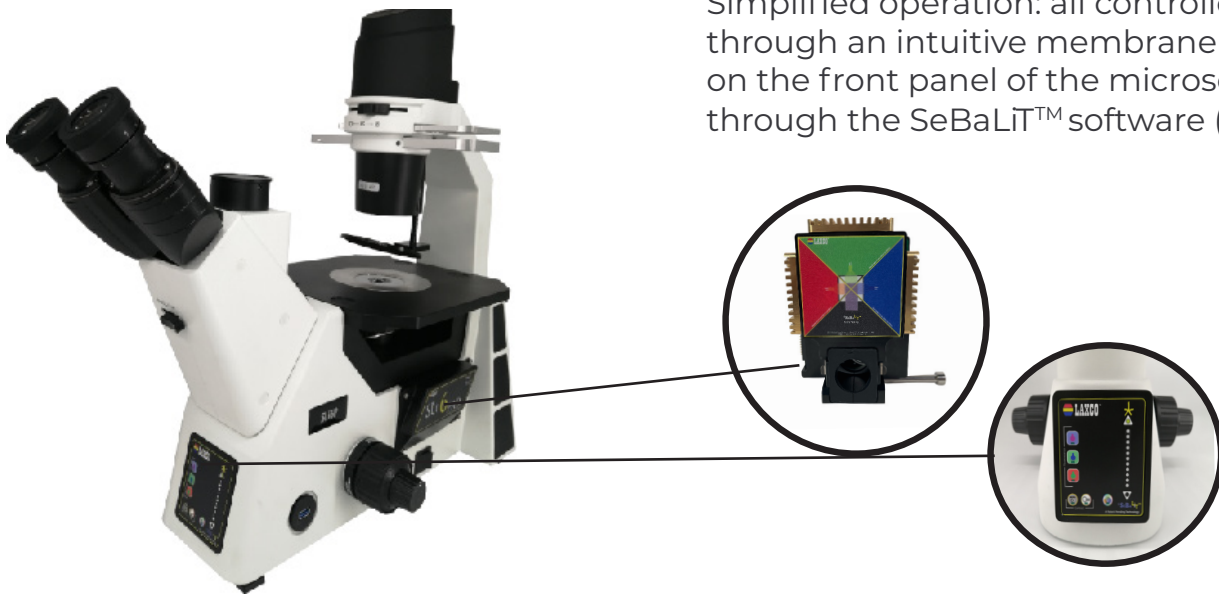
Combine with fluorescence to create an overlay image.



# OPERATION

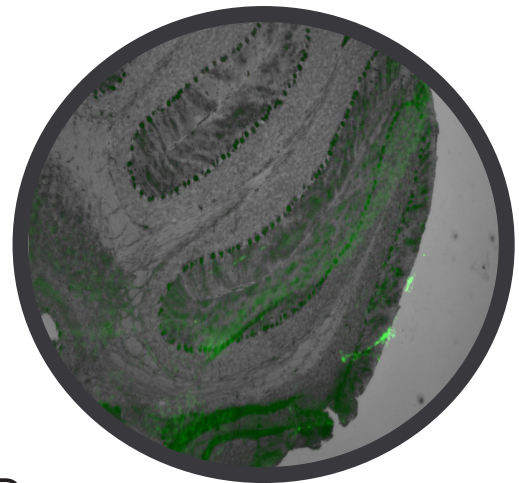
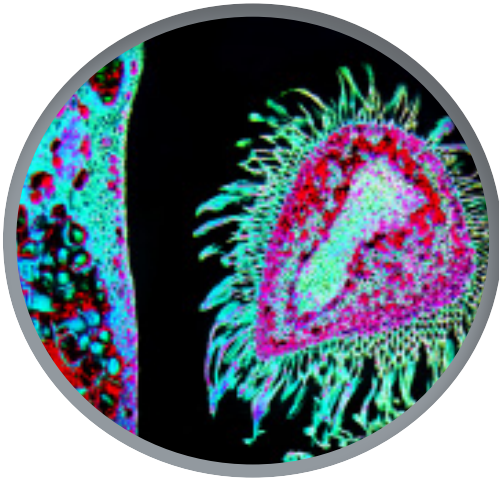
## EASE-OF-USE

Simplified operation: all controlled through an intuitive membrane switch on the front panel of the microscope or through the SeBaLiT™ software (optional).



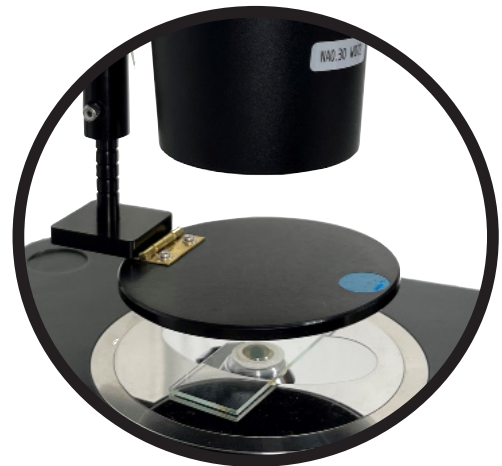
## COMBINED MULTI-CONTRAST

Combine fluorescence, phase, and Enhanced Darkfield Contrast.



## LIGHT SHIELD

No need for a darkroom with Laxco's adjustable light shield.





# CONTROLS

## FLUORESCENCE CHANNELS

Switch between each fluorescence channel (multi-bandpass filter set requires minimal moving parts).

## CONTRAST METHODS

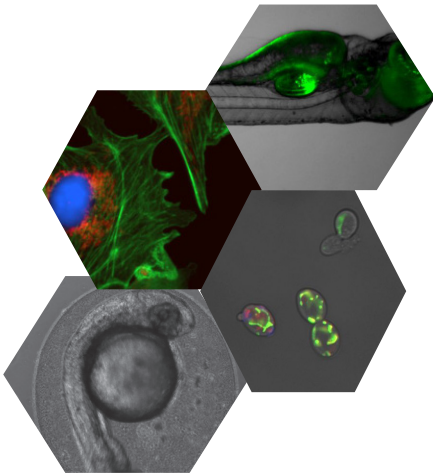
Quickly switch between BF/PH and Enhanced DC.

## MULTI-CHANNEL MODE

Quickly switch to multi-channel mode

## BRIGHTNESS CONTROLS

Adjust the brightness for each contrast method or fluorescent channel individually, and the system remembers it.



## SINGLE CHANNEL MODE

In this mode, users can have the ability to visualize and adjust each individual channel/contrast method brightness level.

## MULTI-CHANNEL MODE

One of the key features to the SLi6 Series product line is its multi-channel mode. When selected the user can have the ability to switch on and off any combination of contrast methods. The system utilizes its smart intelligence to recall previously adjusted brightness settings set in single channel mode and recognizes what filter set is in the light path. In this mode users can easily move between channels and capture images quickly.

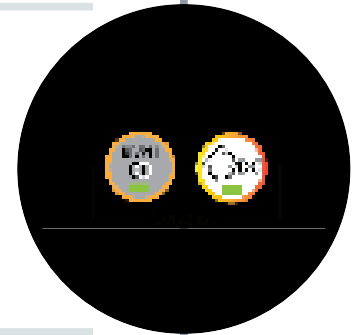
When combined with a multi-bandpass filter set, users can switch between channels/contrast methods without the need of moving any microscope components.



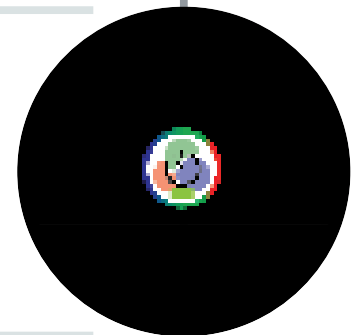
FLUORESCENCE CHANNELS



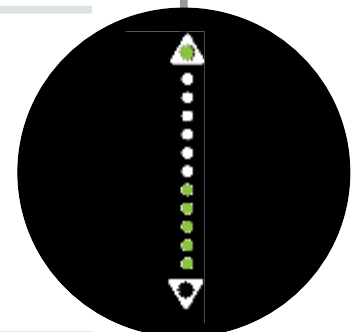
CONTRAST METHODS



MULTI-CHANNEL MODE



BRIGHTNESS CONTROLS

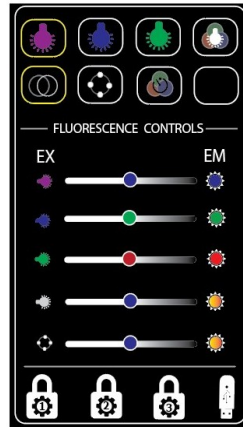


# SEBALIT™

SeBaLiT™ Software, in conjunction with its companion controller, changes the way you control your fluorescence microscope by simplifying the complexities associated with the traditional fluorescence microscope. Its seamless integration of camera and microscope creates an easy-to-use fluorescence microscope. SeBaLiT™ Software allow for the user to add annotations and perform measurements on their images, provides complete camera control and capture control, multi-channel observation at the click of a button, and fluorescence imaging settings. The latest version of the software includes a newly developed algorithm that virtually removes any possibility for cross talk.

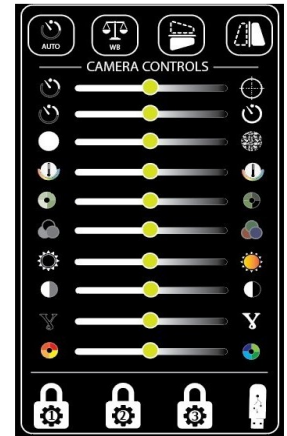
## FLUORESCENCE CONTROL

- Single Channel Viewing
- Multi-viewing Channel Viewing
- Individual Channel
- Intensity Control
- Contrast Mode Selection
- Capability to recognize fluorescence filters currently installed



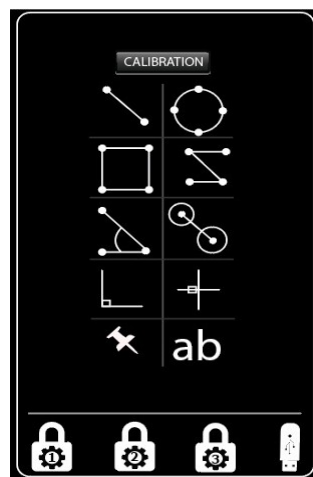
## CAMERA CONTROL

- Auto / Manual
- Exposure Time
- White / Black Balance
- Color Temperature Control
- Brightness / Contrast
- Black & White / Color Mode
- Snap / Video Mode



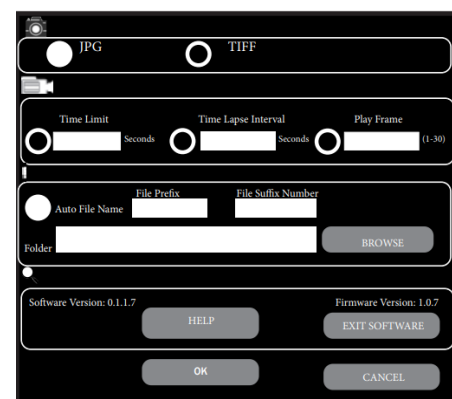
## ANNOTATIONS

- Calibration
- Measurements
- Text
- Lines, Squares, and Circles
- Angular Measurements



## CAPTURE CONTROL

- Save Format
- Time Lapse Control
- File Name Assignment
- Software Information



# STANDARD

| MODEL            | SiI6P-PH1  | SiI6P-FL1   | SiI6P-FLP   |
|------------------|--|---|---|
| OPTICAL SYSTEM   | Infinity corrected   | Infinity corrected  | Infinity corrected  |
| OBSERVATION TUBE | Fixed Trinocular, 45° inclined head, 360° rotating, Adjustable interpupillary distance 50mm to 75mm, 100:100 image split   | Fixed Trinocular, 45° inclined head, 360° rotating, Adjustable interpupillary distance 50mm to 75mm, 100:100 image split  | Fixed Trinocular, 45° inclined head, 360° rotating, Adjustable interpupillary distance 50mm to 75mm, 100:100 image split  |
| OBJECTIVES       | LWD Infinity plan positive phase contrast objective (4X, 10X, 20X)   | LWD Infinity fluorescent objective (4X, 10X, 40X)   | LWD Infinity plan positive phase contrast objective (4x, 10x) and Semi-Apo LWD Infinity plan positive phase contrast objective (20x, 40x)   |
| EYEPIECES        | PL10X/22mm 10x eyepiece, adjustable with eyecups   | PPL10X/22mm 10x eyepiece, adjustable with eyecups   | PL10X/22mm 10x eyepiece, adjustable with eyecups  |
| FIELD OF VIEW    | 22mm   | 22mm  | 22mm  |
| FOCUS            | Coarse and Fine - low position coaxial focusing mechanism, coarse range: 25mm, fine precision: 0.002mm, with tension adjustment and upper limit  | Coarse and Fine - low position coaxial focusing mechanism, coarse range: 25mm, fine precision: 0.002mm, with tension adjustment and upper limit   | Coarse and Fine - low position coaxial focusing mechanism, coarse range: 25mm, fine precision: 0.002mm, with tension adjustment and upper limit   |
| CONDENSER        | N.A. 0.3, working distance 72mm, Condenser lens can be removed to view specimens in large vessels  | N.A. 0.3, working distance 72mm, Condenser lens can be removed to view specimens in large vessels   | N.A. 0.3, working distance 72mm, Condenser lens can be removed to view specimens in large vessels   |
| ILLUMINATION     | Variable Intensity Transmitted 5w LED  | Variable Transmitted 5w LED<br><br>Fluorescent Illumination<br>Excitation<br><ul style="list-style-type: none"> <li>Variable intensity 3W LED; 410nm to 415nm for DAPI excitation</li> <li>Variable intensity 3W LED; 480nm to 485nm for FITC excitation</li> <li>Variable intensity 3W LED; 550nm to 555nm for TRITC excitation</li> </ul> Emission Filters<br><ul style="list-style-type: none"> <li>455nm ± 25nm for DAPI</li> <li>525nm ± 18nm for FITC</li> <li>605nm ± 17.5nm for TRITC</li> </ul> Dichroic Filter<br><ul style="list-style-type: none"> <li>Triple bandpass for DAPI, FITC, TRITC</li> </ul> | Variable Transmitted 5w LED<br><br>Fluorescent Illumination<br>Excitation<br><ul style="list-style-type: none"> <li>Variable intensity 3W LED; 410nm to 415nm for DAPI excitation</li> <li>Variable intensity 3W LED; 480nm to 485nm for FITC excitation</li> <li>Variable intensity 3W LED; 550nm to 555nm for TRITC excitation</li> </ul> Emission Filters<br><ul style="list-style-type: none"> <li>455nm ± 25nm for DAPI</li> <li>525nm ± 18nm for FITC</li> <li>605nm ± 17.5nm for TRITC</li> </ul> Dichroic Filter<br><ul style="list-style-type: none"> <li>Triple bandpass for DAPI, FITC, TRITC</li> </ul> |
| STAGE            | Fixed stage standard, Mechanical stage with moving range 120(X), 80(Y)mm with metal and glass stage plates, XY coaxial knob place on right side of the plain stage (optional mechanical stage)   | Fixed stage standard, Mechanical stage with moving range 120(X), 80(Y)mm with metal and glass stage plates, XY coaxial knob place on right side of the plain stage (optional mechanical stage)  | Fixed stage standard, Mechanical stage with moving range 120(X), 80(Y)mm with metal and glass stage plates, XY coaxial knob place on right side of the plain stage (optional mechanical stage)  |
| FILTERS          | Transmitted Light Sliders<br><ul style="list-style-type: none"> <li>Phase Slider (on phase models) pre-centered phase contrast aperture for 4X, 10X, 20X and 40X, and one 45mm empty aperture.</li> <li>45mm monochromatic contrast color filter (green)</li> <li>Light balancing daylight color temperature transition filter (used primarily in brightfield observations)</li> </ul> | <ul style="list-style-type: none"> <li>45mm monochromatic contrast color filter (green)</li> <li>Light balancing daylight color temperature transition filter (used primarily in brightfield observations)</li> </ul>   | <ul style="list-style-type: none"> <li>45mm monochromatic contrast color filter (green)</li> <li>Light balancing daylight color temperature transition filter (used primarily in brightfield observations)</li> </ul>   |
| NOSEPIECE        | Quintuple nosepiece  | Quintuple nosepiece   | Quintuple nosepiece   |
| CAMERA           | SeBaCAM™Cool 1.7C (OPTIONAL)   | SeBaCAM™Cool 1.7C (OPTIONAL)  | SeBaCAM™Cool 1.7C (OPTIONAL)  |
| SOFTWARE         | SeBaLIT™ (patent pending) - OPTIONAL   | SeBaLIT™ (patent pending) - OPTIONAL  | SeBaLIT™ (patent pending) - OPTIONAL  |
| DIMENSIONS       | Depth 23.2 inches (590mm)<br>Width 8.9 inches (226mm)<br>Height 20.0 inches (507mm)  | Depth 23.2 inches (590mm)<br>Width 8.9 inches (226mm)<br>Height 20.0 inches (507mm)   | Depth 23.2 inches (590mm)<br>Width 8.9 inches (226mm)<br>Height 20.0 inches (507mm)   |
| WEIGHT           | 26.1 Kilograms   | 26.1 Kilograms  | 26.1 Kilograms  |

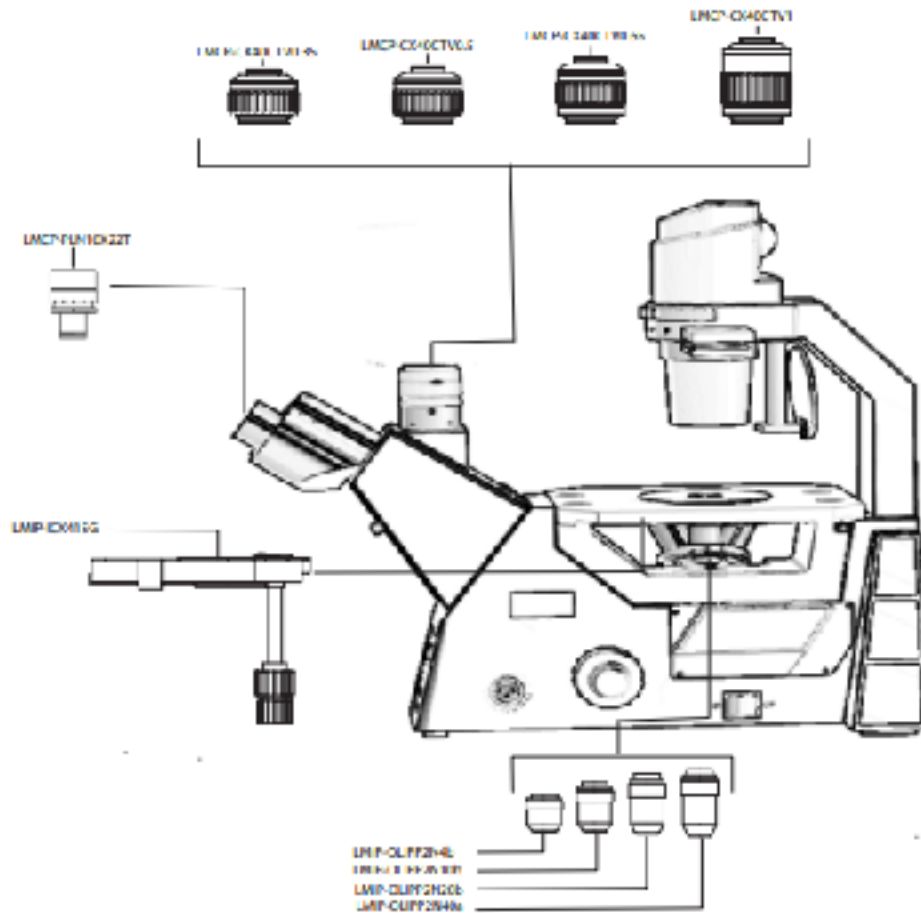
# ACCESSORIES

|                              |                  |  |
|------------------------------|------------------|--|
| UPGRADE KITS                 | SLi6P-ME-Kit1    | Mechanical Stage Upgrade Kit                                     |
|                              | SLi6P-DU-Kit2    | Digital Camera Upgrade Kit                                       |
|                              | SLi6P-FL-Kit3    | Kit, Fluorescent Upgrade Kit 1                                   |
|                              | SLi6P-FL-Kit4    | Kit, Fluorescent Upgrade Kit2                                    |
| OBJECTIVES / EYEPIECES       | LMIP-OLIPN4B     | LWD infinity plan objective 4X                                   |
|                              | LMIP-OLIPN10B    | LWD infinity plan objective 10X                                  |
|                              | LMIP-OLIPN20B    | LWD infinity plan objective 20X                                  |
|                              | LMIP-OLIPN40A    | LWD infinity plan objective 40X                                  |
|                              | LMIP-OLIPN60     | LWD infinity plan objective 60X                                  |
|                              | LMIP= OLIPP2N4b  | LWD infinity plan positive phase contrast objective 4X           |
|                              | LMIP-OLIPP2N10b  | LWD infinity plan positive phase contrast objective 10X          |
|                              | LMIP-OLIPP2N20b  | LWD infinity plan positive phase contrast objective 20X          |
|                              | LMIP-OLIPP2N40a  | LWD infinity plan positive phase contrast objective 40X          |
|                              | LMIP-OLIPF4      | LWD Infinity fluorescent Objective 4X                            |
|                              | LMIP-OLIPF10     | LWD Infinity fluorescent Objective 10X                           |
|                              | LMIP-OLIPF20     | LWD Infinity fluorescent Objective 20X                           |
|                              | LMIP-OLIPF40     | LWD Infinity fluorescent Objective 40X                           |
|                              | LMIP-OLIPF60     | LWD Infinity fluorescent Objective 60X                           |
|                              | LMIP-OLIPP2F20   | Semi-Apo LWD Infinity plan positive phase contrast objective 20X |
|                              | LMIP-OLIPP2F40   | Semi-Apo LWD Infinity plan positive phase contrast objective 40X |
|                              | LMCP-OIPP100s    | Infinity plan achromatic phase contrast objective 100X/1.25      |
|                              | LMCP-PLN10X22T   | High eye point wide field flat field eyepieces PL10X /18mm       |
|                              | FILTERS          | LMIP-IF550   |
| LMIP-LBD                     |                  | LBD Light Balancing Color Temperature Filter (45mm diameter)     |
| LMIP-ICX40SL                 |                  | Phase contrast slider  |
| LMCP-LBD                     |                  | LBD Light Balancing Color Temperature Filter (45mm diameter)     |
| LMCP-XY-FCF                  |                  | Neutral filter (45mm diameter)                                   |
|                              | SLi6P-CF69302    | SeBaLiT™ Fluorescence Module for DAPI/FITC/Texas Red             |
|                              | SLi6P-CF69308    | SeBaLiT™ Fluorescence Module for ECFP/EYFP/mCherry               |
|                              | SLi6P-CF69300    | SeBaLiT™ Fluorescence Module for DAPI/FITC/TRITC                 |
| SOFTWARE/ CAMERAS / C-MOUNTS | 1005237          | Software SeBaLiT™ Desktop Edition for SLi6P W10 64B              |
|                              | SeBaCamCool1.4M  | 1.4MP Mono camera  |
|                              | SeBaCamCool1.4C  | 1.4MP color camera   |
|                              | SeBaCamCool1.7C  | Camera, SeBaCamCool1.7C  |
|                              | LMCP-CX40CTV0.65 | 0.65XCTV with C mount, focus adjustable                          |
|                              | LMCP-CX40CTV1    | 1XCTV with C mount, focus adjustable                             |
| STAGE                        | LMIP-ICX41SGM    | Mechanical stage with moving range 120(X), 80(Y)mm               |
|                              | LMIP-XDCPG       | Glass Stage Plate  |
|                              | LMIP-XDCPM3      | Metal Stage Insert   |
|                              | LMIP-XDSGEX      | Extension Plate  |
|                              | LMIP-XDSGHJ02    | Slide holder (diameter 54 mm, 26.5X76.5)                         |
|                              | LMIP-XDSGHJ01    | 35 mm petri dish holder  |
|                              | LMIP-XDSGHJ03    | Terasaki holder (diameter 65 mm, 56X81.5)                        |

\* NOTE - Laxco is continually striving to improve both the quality and innovative technology used on their microscopes, therefore, specifications and appearances are subject to change without any notice or obligation on the part of the manufacturer. All Laxco microscopes are manufactured in conformance to current antifungal standards. The observation tube is resistant to bacteria and fungi that may be present in the environmental setting of the microscope.



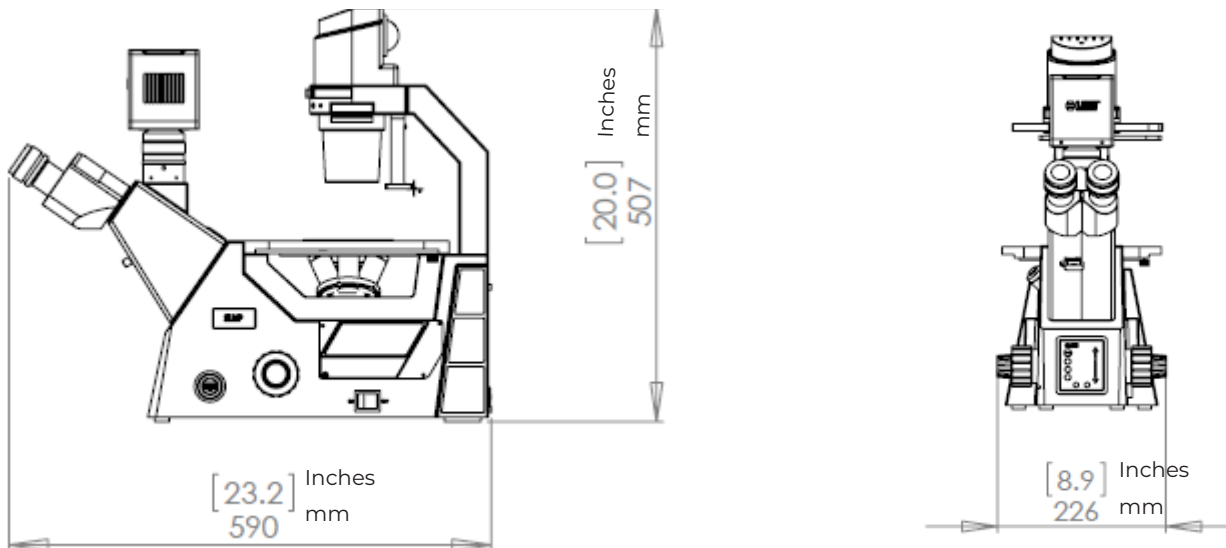
# CONFIGURATION CHART



Microscope Weight 55lbs

Power requirement: AC adaptor, input 100-240V 50/60Hz, output: 12V/6.7A, USA & Canada

## DIMENSIONS





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