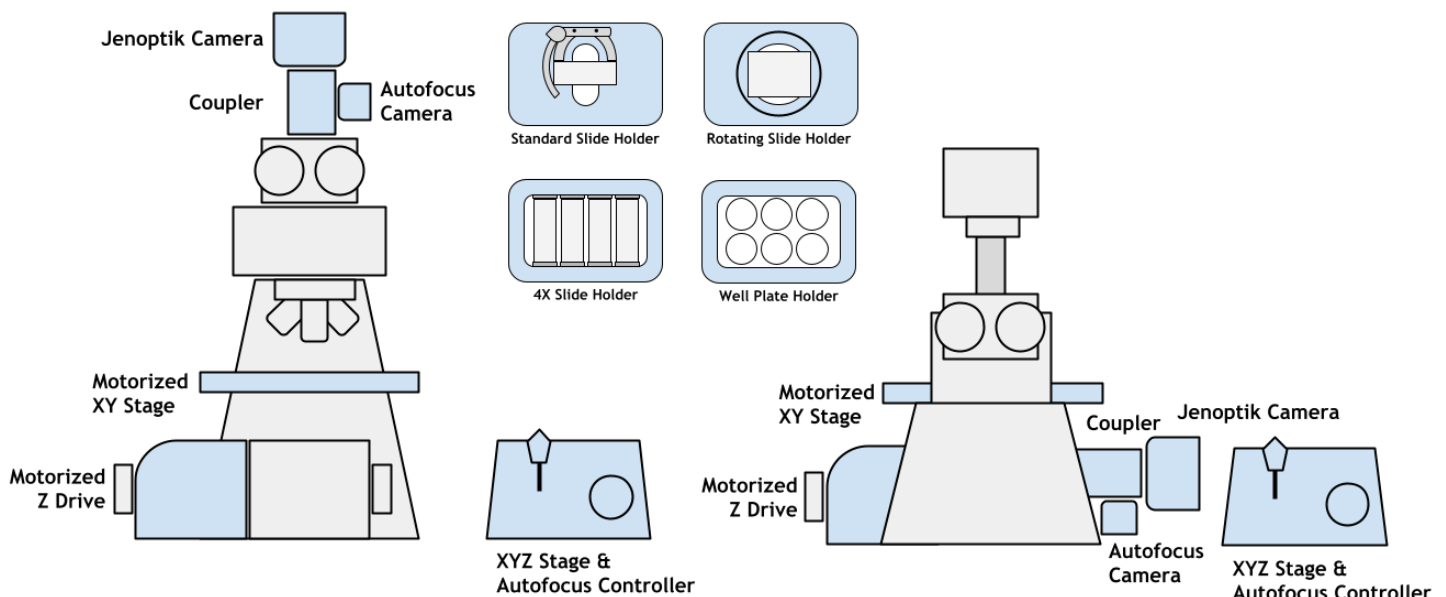




# MICROSCOPE UPGRADE KITS



## UPGRADE EXISTING MICROSCOPE

Your existing microscope can be upgraded to support tracking topography in BIOQUANT. Upgrade kits include a high, resolution scientific grade digital camera, coupler, and either stage encoders or a motorized stage.

Microscopes with a supported digital camera and motorized stage support BIOQUANT SCAN.

## BIOQUANT SCAN

BIOQUANT SCAN is an extension to the BIOQUANT OSTEOPATHY or BIOQUANT Life Science analysis software. It is used to scan slides or a well plate at high resolution and export images.

BIOQUANT SCAN works with microscopes with a supported digital camera and motorized stage.

## MICROSCOPE UPGRADE KITS: CAMERA OPTIONS

Jenoptik Gryphax cameras use a next generation **scientific CMOS** sensor with a global shutter and a simple **USB3** interface. All the cameras in this family provide a live image at **1920x1200** with at least 30 frames per second. This is **2X to 4X faster** than current CCD cameras and **4X resolution**.

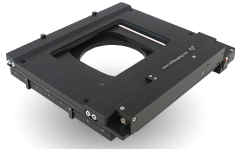


The flagship **Prokyon** model offers a special 20 megapixel mode through pixel-shifting in addition to the native live image at 1920x1200 60 fps with fanless cooling. The **Kapella** camera keeps the fanless cooling but saves money by removing the 20 megapixel imaging mode. The **Subra** model is even more economical by removing the fanless cooling.

	JENOPTIK PROKYON	JENOPTIK KAPELLA	JENOPTIK SUBRA
<b>Model Number</b>	KIT1-PRO	KIT1-KAP	KIT1-SUB
<b>Sensor Specifications</b>			
<b>Sensor Model</b>	Sony IMX174	Sony IMX174	Sony IMX174
<b>Sensor Design</b>	Scientific CMOS	Scientific CMOS	Scientific CMOS
<b>Sensor Size</b>	1920x1200	1920x1200	1920x1200
<b>Max Frame Rate</b>	120fps	60fps	30fps
<b>Pixel Size</b>	5.8 microns	5.8 microns	5.8 microns
<b>Image Specifications</b>			
<b>Capture Resolutions</b>	5760x3600 1920x1200 3840x2400 1280x960	1920x1200 1280x960	1920x1200 1280x960
<b>Exposure Control</b>	26 us to 60 s	26 us to 60 s	26 us - 30 s
<b>Cooling</b>	Fanless	Fanless	N/A
<b>Gain Control</b>	1X - 30X	1X - 30X	1X - 10X
<b>Exposure Control</b>	Auto Exposure	Auto Exposure	Auto Exposure
<b>Color Correction</b>	Auto White Balance	Auto White Balance	Auto White Balance
<b>Data and Power Interface Specifications</b>			
<b>Bit Depth</b>	8bits / channel + HDR	8bits / channel + HDR	8bits / channel + HDR
<b>Bus Type</b>	USB3.0	USB3.0	USB3.0
<b>Power</b>	4.5W	4.5W	4.5W
<b>Mounting and Physical Specifications</b>			
<b>Microscope Adapter</b>	0.7X C-Mount Adapter	0.7X C-Mount Adapter	0.7X C-Mount Adapter
<b>Dimensions</b>	85mm x 75mm x 50mm	85mm x 75mm x 50mm	85mm x 75mm x 50mm
<b>Mass</b>	420g	400g	400g

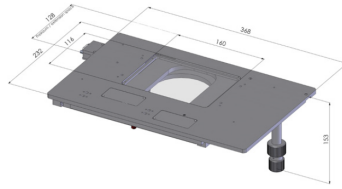
# MICROSCOPE UPGRADE KITS: STAGE OPTIONS

## ASI Motorized Stages



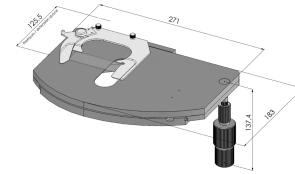
These stages are **controlled by BIOQUANT** software to move the sample and, in some cases, automatically adjust focus. Supports the **rotating sample holders**. Used with **BIOQUANT SCAN** and/or **Live image measurement**.

## Marzhauser MTM Stages



These stages are **moved by hand**. BIOQUANT software tracks the stage for the current position of the sample. Supports the **rotating sample holders**. Used with **live image measurement**.

## Marzhauser EK Stages



These stages are **moved by hand**. BIOQUANT software tracks the stage for the current position of the sample. Only supports the **spring arm slide holder**. Used with **live image measurement**.

	MS4400 XYZ AF	MS4400 XY	MTM XY	EK XY
<b>Manufacturer/Model</b>	ASI MS04400 Autofocus	ASI MS-4400	Marzhauser MTM-MR	Marzhauser EK-MR
<b>Movement</b>	Motorized XYZ	Motorized XY	Manual XY	Manual XY
<b>Encoder Structure and Positional Accuracy</b>				
<b>Encoder Geometry</b>	Rotary	Rotary	Linear	Linear
<b>Encoder Sensor</b>	Optical	Optical	Magnetic	Magnetic
<b>XY Resolution</b>	.02 microns	.02 microns	.05 microns	.05 microns
<b>Z Resolution</b>	.05 microns	N/A	N/A	N/A
<b>XY Accuracy</b>	+/- .7 microns	+/- .7 microns	+/- 1.0 microns	+/- 1.0 microns
<b>Controller Features</b>				
<b>Display</b>	XYZ Position + Focus	XY Position	XY Position	XY Position
<b>PC Interface</b>	9-pin Serial Port	9-pin Serial Port	9-pin Serial Port	9-pin Serial Port
<b>Available Sample Holders</b>				
<b>Spring Arm</b>	25x75mm slides 50x75mm slides	25x75mm slides 50x75mm slides	25x75mm slides 50x75mm slides	25x75mm slides 50x75mm slides
<b>Rotating</b>	25x75mm slides 50x75mm slides	25x75mm slides 50x75mm slides	25x75mm slides 50x75mm slides	N/A
<b>Well Plate</b>	85x127mm plates	N/A	N/A	N/A
<b>Multi-slide</b>	25x74mm slides x 4	N/A	N/A	N/A
<b>Stage Physical Specifications</b>				
<b>Compatible Microscopes</b>	Most Upright & Inverted	Most Upright & Inverted	Most Upright	Most Upright

## MICROSCOPE UPGRADE KIT: COMPARISON CHART

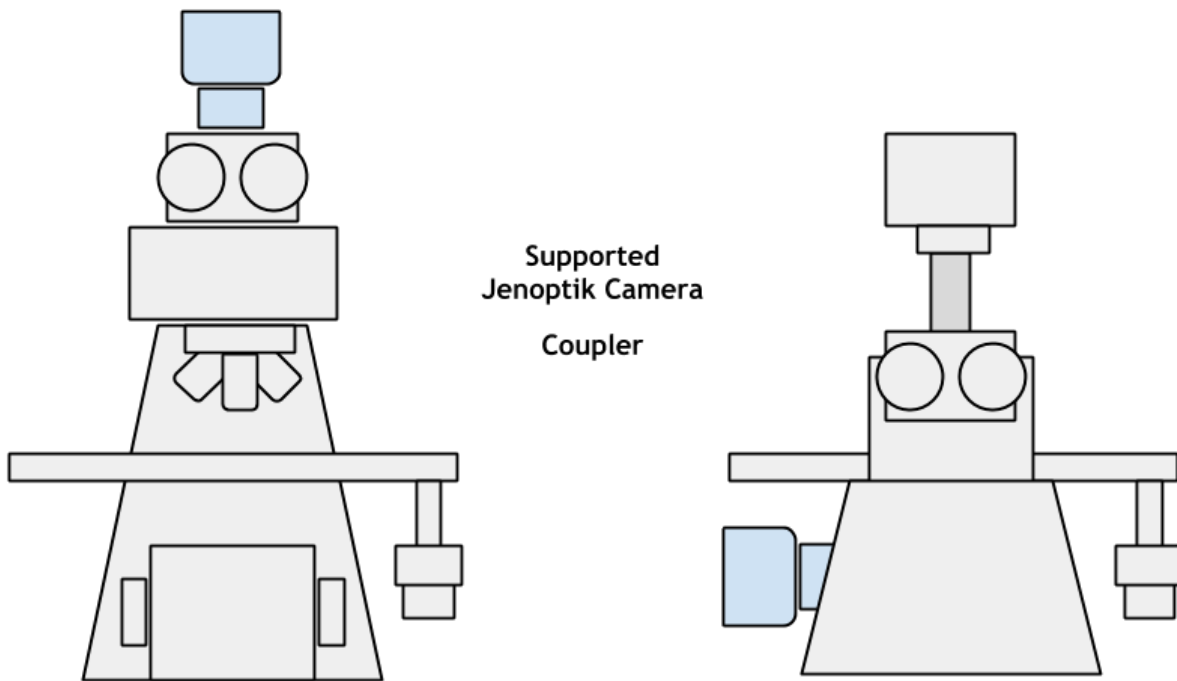
For labs that want to use BIOQUANT for their imaging, we offer four upgrade kits. Each kit provides a different balance of cost and imaging automation. All kits provide the basic capacity to measure on a live image and to collect images for measurement.

These kits are not required for BIOQUANT. Images for analysis can come from these kits, a central imaging core, or an imaging system already set up in your lab.

<b>Imaging with BIOQUANT OSTEO or BIOQUANT Life Science</b>	<b>KIT1-PRO KIT1-KAP KIT1-SUB</b>	<b>KIT2-EK-SUB</b>	<b>KIT2-MM-PRO KIT2-MM-KAP KIT2-MM-SUB</b>	<b>KIT3-AM-PRO KIT3-AM-KAP KIT3-AM-SUB</b>	<b>KIT4-AA-PRO KIT4-AA-KAP KIT4-AA-SUB</b>
Live image measurement.	✓	✓	✓	✓	✓
Manual image stitching with the free Jenoptik GRYPHAX software. (5,000 x 5,000 pixel maximum.)	✓	✓	✓	✓	✓
Manual image stitching with BIOQUANT OSTEO or BIOQUANT Life Science.. (32,000 x, 32,000 pixel maximum.)		✓	✓	✓	✓
<b>Imaging with BIOQUANT SCAN</b>					
Single-slide automated scanning.				✓	✓
Pause/rewind scan for manual focus correction.				✓	✓
Automatic focus correction.					✓
Multi-slide automated scanning.					✓
Multi-well automated scanning.					✓
<b>Sampling Handling</b>					
Spring arm holder: 25x75mm and 50x75mm slides		✓	✓	✓	✓
Rotating slide holder: 25x75mm and 50x75mm slides			✓	✓	✓
4X multi-slide holder: 25x75mm slides					✓
Well plate holder					✓

## About KIT1-XXX: Image Capture & Limited Image Stitching

Upgrade your microscope so it can be used to get a live image in BIOQUANT and to capture images of your slides.



Supports upright or inverted microscopes. Microscope requires trinocular head.

- **Live Image Measurement**
- **Manual Image Stitching with free JENOPTIK GRYPHAX® software**
- **Multiple Camera Options**
  - Prokyon 20.7 Megapixel, 60 fps, cooled
  - Kapella 2.2 Megapixel, 60 fps, cooled
  - Subra 2.2 Megapixel, 30 fps, non-cooled
- **C-mount Camera Adapter**
  - Attaches the camera to the microscope.
- **Software Requirements**
  - BIOQUANT OSTEO or BIOQUANT Life Science
- **No Stage Included**

### **KIT1-PRO Imaging Kit 1: Jenoptik Prokyon Camera and Coupler**

- JENOPTIK GRYPHAX® Prokyon 20.7 Megapixel, 60 frames/second, color, cooled
- C-mount Microscope Adapter, if required

### **KIT1-KAP Imaging Kit 1: Jenoptik Kapella Camera and Coupler**

- JENOPTIK GRYPHAX® Kapella 2.2 Megapixel, 60 frames/second, color, cooled
- C-mount Microscope Adapter, if required

### **KIT1-SUB Imaging Kit 1: Jenoptik Subra Camera and Coupler**

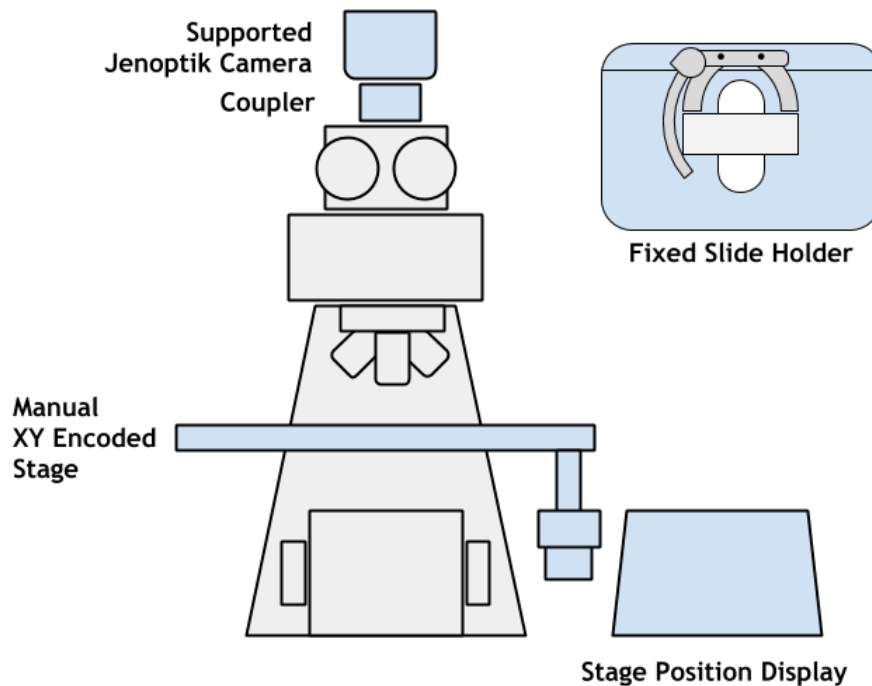
- JENOPTIK GRYPHAX® Subra 2.2 Megapixel, 30 frames/second, color, non-cooled
- C-mount Microscope Adapter, if required

## About KIT2-EK-SUB: Live Image Measurement & Fixed Slide Holder

**Upgrade a microscope already in your laboratory** to perform digital imaging of slides. This kit is not compatible with inverted microscopes. Unlike the KIT-MR-XX, this kit does not support a rotating specimen holder.

The stage continuously reports its position to the BIOQUANT software. This allows BIOQUANT to tag each image it captures with its XY position. BIOQUANT uses the position data to enable **automatic image stitching**.

This **lower cost option** stage is often paired with the lower cost Subra camera as a budget friendly solution.



Supports upright microscopes. Inverted microscopes not supported. Microscope requires trinocular head

- **Live Image Measurement**
- **Jenoptik Subra Digital Camera**  
2.2 Megapixel, 30 fps, non-cooled
- **XY Encoded Stage**  
Marzhauser EK Encoded Microscope Stage  
Fixed orientation spring arm slide holder.
- **Camera Adapter**
- **Automatic Position Tracking**  
During live image measurement, when you move the stage, the software knows.  
For image stitching, capture slightly overlapping images in BIOQUANT.
- **Software Requirements**  
BIOQUANT OSTEO or BIOQUANT Life Science

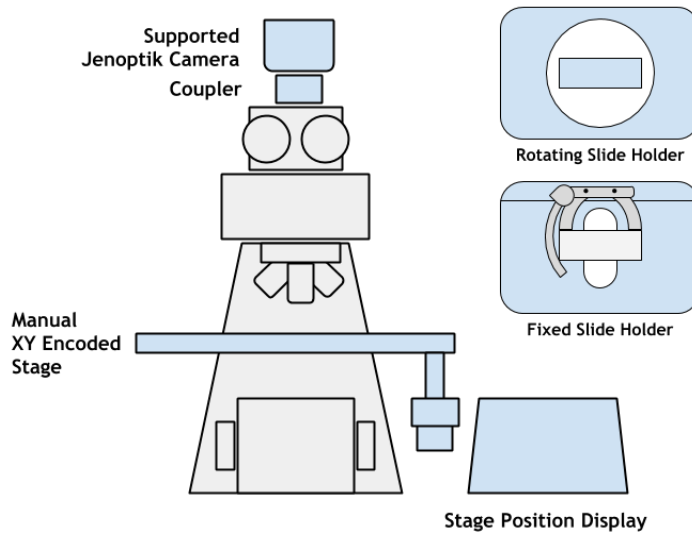
### **KIT2-EK-SUB**     **Jenoptik Subra Digital Camera & Marzhauser EK Encoded Stage**

- JENOPTIK GRYPHAX® Subra 2.2 Megapixel, 30 frames/second, color, non-cooled
- Marzhauser EK Encoded Microscope Stage with Fixed Orientation Slide holder
- 0.6 C-Mount Camera Adapter

## About KIT2-MR-XXX: Live Imaging Measurement & Rotating Slide Holder

Upgrade a microscope already in your laboratory to perform digital imaging of slides. It is not compatible with inverted microscopes.

The stage continuously reports its position to the BIOQUANT software. This allows BIOQUANT to tag each image it captures with its XY position. BIOQUANT uses the position data to enable **automatic image stitching**.



Supports upright microscopes. Inverted microscopes not supported.  
Microscope requires trinocular head.

- **Live Image Measurement**
- **Multiple Camera Options**
  - Prokyon 20.7 Megapixel, 60 fps, cooled
  - Kapella 2.2 Megapixel, 60 fps, cooled
  - Subra 2.2 Megapixel, 30 fps, non-cooled
- **XY Encoded Stage**
  - Marzhauser MTM-MR Encoded Microscope Stage
  - Rotating slide holder for preferred orientation.
- **Camera Adapter**
- **Automatic Position Tracking**
  - During live image measurement, when you move the stage, the software knows.
  - For image stitching, capture slightly overlapping images in BIOQUANT.
- **Software Requirements**
  - BIOQUANT OSTEO or BIOQUANT Life Science

### **KIT2-MM-PRO Jenoptik Prokyon Camera & Marzhauser MTM-MR Encoded Stage**

- JENOPTIK GRYPHAX® Prokyon 20.7 Megapixel, 60 frames/second, color, cooled
- Marzhauser MTM-MR Encoded Microscope Stage & C-Mount Camera Adapter

### **KIT2-MM-KAP Jenoptik Kapella Camera & Marzhauser MTM-MR Encoded Stage**

- JENOPTIK GRYPHAX® Kapella 2.2 Megapixel, 60 frames/second, color, cooled
- Marzhauser MTM-MR Encoded Microscope Stage & C-Mount Camera Adapter

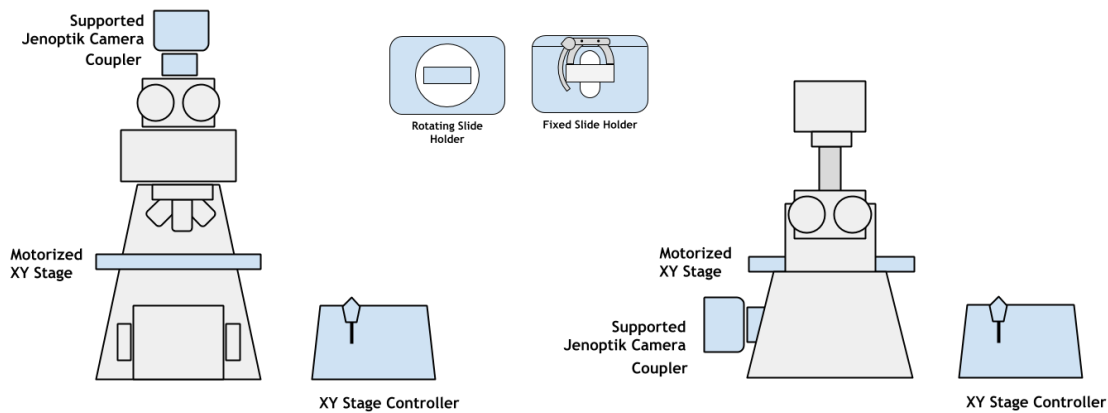
### **KIT2-MM-SUB Jenoptik Subra Camera & Marzhauser MTM-MR Encoded Stage**

- JENOPTIK GRYPHAX® Subra 2.2 Megapixel, 30 frames/second, color, non-cooled
- Marzhauser MTM-MR Encoded Microscope Stage & C-Mount Camera Adapter

## About Kit 3: Automated Scanning, Manual Focus & Live Image Measurement

Upgrade a microscope already in your laboratory to perform automated slide scanning. This kit is compatible with both **upright and inverted microscopes**.

This kit **supports BIOQUANT SCAN digital pathology software**. The operator defines an imaging area, then BIOQUANT SCAN controls the camera and stage to **automatically collect images**. The system pauses at regular intervals to **allow an operator to adjust focus if needed**. The system can also be manually paused and resumed. Images are stitched to **automatically create a digital slide** of the section.



Supports Upright or Inverted Microscopes. Microscope Requires Trinocular Head.

- **Integrated Live Image in BIOQUANT OSTEO or BIOQUANT Life Science**
- **Supports Slide Scanning with BIOQUANT SCAN**
- **Multiple Camera Options**
  - Prokyon 20.7 Megapixel, 60 fps, cooled
  - Kapella 2.2 Megapixel, 60 fps, cooled
  - Subra 2.2 Megapixel, 30 fps, non-cooled
- **XY Motorized Stage**
  - ASI MS4400 XY Motorized Stage
    - 0.1 micron XY repeatability.
    - 32,768 x 32,768 scan resolution.
    - Rotating slide holder for preferred orientation.
- **Stage Tracking: Motorized Stage**
  - Live Imaging
    - When you move the stage, the software knows.
    - Move stage with joystick or within BIOQUANT.
  - Image Scanning
    - BIOQUANT Scan automatically scans slide at high resolution.
    - You manually focus on designated fields.
- **Camera Adapter**
- **Software Requirements**
  - BIOQUANT OSTEO or BIOQUANT Life Science
  - BIOQUANT SCAN

**KIT3-AM-PRO Prokyon Camera & ASI MS4400 XY Motorized Stage with Manual Focus**

- JENOPTIK GRYPHAX® Prokyon 20.7 Megapixel, 60 frames/second, color, cooled
- ASI MS4400 XY Motorized Stage, Camera Adapter

**KIT3-AM-KAP Kapella Camera & ASI MS4400 XY Motorized Stage with Manual Focus**

- JENOPTIK GRYPHAX® Kapella 2.2 Megapixel, 60 frames/second, color, cooled
- ASI MS4400 XY Motorized Stage, Camera Adapter

**KIT3-AM-SUB Subra Camera & ASI MS4400 XY Motorized Stage with Manual Focus**

- JENOPTIK GRYPHAX® Subra 2.2 Megapixel, 30 frames/second, color, non-cooled
- ASI MS4400 XY Motorized Stage, Camera Adapter

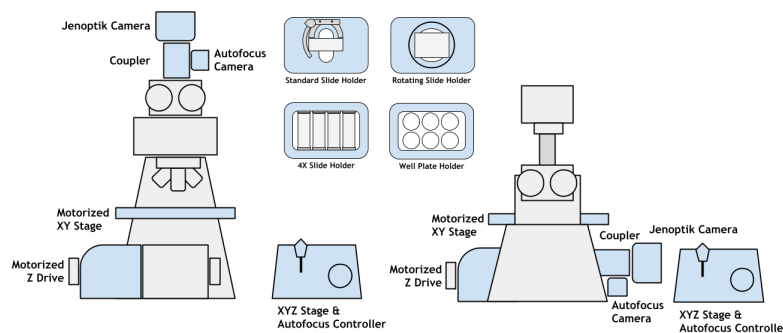


## About Kit 4: Automated Multi-slide Scanning, Automated Focus & Live Image Measurement

Upgrade a microscope already in your laboratory to perform automated slide scanning. This kit is compatible with both **upright and inverted microscopes**.

This kit **supports BIOQUANT SCAN digital pathology software**. The operator defines an imaging area then BIOQUANT SCAN controls the camera and stage to **automatically collect images**. The system **continuously corrects the focus of the sample**. The system can also be manually paused and resumed. Images are stitched to **automatically create a digital slide** of the section.

This kit also supports BIOQUANT SCAN for **imaging wells in multi-well plates**. The operator identifies wells to be scanned and BIOQUANT SCAN controls the camera and stage to automatically collect images from each marked well. Images from each well are **automatically stitched to create a scan of each well**.



Supports Upright or Inverted Microscopes. Requires Trinocular Head.

- **Integrated Live Image in BIOQUANT OSTEOP or BIOQUANT Life Science**
- **Multi-slide Slide Scanning through BIOQUANT SCAN**
- **Multiple Camera Options**  
Prokyon 20.7 Megapixel, 60 fps, cooled  
Kapella 2.2 Megapixel, 60 fps, cooled  
Subra 2.2 Megapixel, 30 fps, non-cooled
- **XYZ Motorized Stage with Autofocus**  
ASI MS4400 Motorized Stage  
Autofocus controlled Z drive.  
Rotating slide holder for preferred orientation.  
Multi-slide holder for batch scanning.  
Monochrome Autofocus Camera & Dual Camera Adapter
- **Stage Tracking: Motorized Stage**  
Live Imaging  
When you move the stage, the software knows.  
Move stage with joystick or within BIOQUANT.  
Focus within BIOQUANT.  
Image Scanning  
BIOQUANT Scan automatically scans slide or well plates at high resolution.  
BIOQUANT SCAN auto focuses on designated fields.  
Scan up to 8 sections for 4 slides at a time.
- **Software Requirements**  
BIOQUANT OSTEOP or BIOQUANT Life Science  
BIOQUANT SCAN

### KIT4-AA-PRO Prokyon Camera & ASI XYZ MS4400 Stage with Auto Focus

- JENOPTIK GRYPHAX® Prokyon 20.7 Megapixel, 60 frames/second, color, cooled
- ASI MS4400 XYZ Motorized Stage, Autofocus, Dual Adapter, Autofocus Camera

### KIT4-AA-KAP Kapella Camera & ASI XYZ MS4400 Stage with Auto Focus

- JENOPTIK GRYPHAX® Kapella 2.2 Megapixel, 60 frames/second, color, cooled
- ASI MS4400 XYZ Motorized Stage, Autofocus, Dual Adapter, Autofocus Camera

### KIT4-AA-SUB Subra Camera & ASI XYZ MS4400 Stage with Auto Focus

- JENOPTIK GRYPHAX® Subra 2.2 Megapixel, 30 frames/second, color, non-cooled
- ASI MS4400 XYZ Motorized Stage, Autofocus, Dual Adapter, Autofocus Camera