

# AVAILABLE MICROSCOPES IN MiM CORE

## (1) Zeiss Axioskop 2 with AxioCam Camera (WMB 303)

Objective/Zeiss #	Magnification Air/Oil	Numerical Aperture	Working Distance
A-Plan	2.5x air	0.06 NA	9.4 mm WD
Plan-Neo 44 03 20	5x air	0.15 NA	18.5 mm WD
Plan-Neo 44 03 30	10x air	0.30 NA	5.5 mm WD
Plan-Neo 1004-072	20x air	0.50 NA	2.0 mm WD
Plan-Neo 44 03 50	40x air	0.75 NA	0.5 mm WD
Plan-Neo 1018-595 (1066-987)	100x oil	1.30 NA	0.2 mm WD

### Light sources:

- Halogen lamp (12V 100W) used in brightfield microscopy capturing images of H+E (or other chromogens) stained slides
- EXFO X-Cite lamp and filter blocks for DAPI, Hoechst/FITC/Rhodamine/CY5 and Qdot labeling of fluorescence specimens

### Filter Cubes available:

Description	Exciter	Emitter	Notes
UV (DAPI/Hoeschst)	D350/50x	E420LPv2	Wide UV excitation with longpass emission
DAPI/Hoeschst/AMCA	D350/50x	D460/50m	Excludes wavelengths higher than 490nm
FITC/GFP/DiO	HQ480/40x	HQ535/50m	
Rhodamine Red X	AT560/40x	AT635/60m	Used for RRX, Alexa Fluor 568, Mito Tracker Red, Texas Red, mCherry
TRITC narrow excitation	AT540/25x	AT605/55m	Used for MitoTracker Orange, TRITC, Alexa Fluor 546, DiL, tdTomato
Cy5*	HQ620/60x	HQ700/75m	
Qdot*	E460SPUVv2	E500LP	Shows all Qdot emission above 500nm

\*RRX, TRITC, Cy5 and Qdot filter cubes are switched according to use. See MiM Core staff.

### Software

Zeiss AxioVision, v. 4.8.2

### Computer

Dell Precision 670 Workstation  
Intel Xeon Processor 2.8 GHz  
160Gb RAID1 SATA drive array  
2 GB 400 mhz ECC DDR2 RAM  
nVidia Quadro FX3450 256Mb 3D graphics video card CD/DVD± Reader/Writer

### Camera

AxioCam CCD high resolution 1.4 megapixel digital/color camera 6.45 µm x 6.45 µm pixel size

## (2) Zeiss Axioskop 2 with RT Slider Spot Camera (WMB303)

Objective/Zeiss #	Magnification Air/Oil	Numerical Aperture	Working Distance
Achroplan 44 00 20	4x air	0.1 NA	11.10 mm WD
Plan-Neo 44 03 30	10x air	0.3 NA	5.50 mm WD
Plan-Neo 44 03 40	20x air	0.5 NA	2.0 mm WD
Plan-Neo 44 03 50	40x air	0.75 NA	0.5 mm WD
Plan-Neo 44 04 50*	40x oil	1.30 NA	0.21 mm WD
Plan-Neo 44 04 60	63x oil	1.25 NA	0.1 mm WD

\*May be located on Zeiss LSM 510 META system

### Light sources

- Halogen lamp (12V 50W) used in brightfield microscopy capturing images of H+E (or other chromogens) stained slides
- EXFO X-Cite lamp and filter blocks for DAPI or Hoechst/FITC/Rhodamine/Qdot labeling of fluorescence specimens

### Filter Cubes available:

Description	Exciter	Emitter	Notes
UV (DAPI/Hoeschst)	D350/50x	E420LPv2	Wide UV excitation with longpass emission
DAPI/Hoeschst/AMCA	D350/50x	D460/50m	Excludes wavelengths higher than 490nm
FITC/GFP/DiO	HQ480/40x	HQ535/50m	
Rhodamine Red X	HQ570/20x	HQ620/60m	
Qdot*	D405/90x	E550LP	Does not show emissions bellow 550nm

### Software

Image-Pro Plus

### Computer

Dell OptiPlex GX620  
Pentium D 820 dual core 2.8GHz processor  
160Gb SATA HDD  
2Gb 533mhz DDR2 RAM  
CD/DVD± Reader/Writer

### Camera

RT Slider Spot Camera  
7.4 µm x 7.4 µm pixel size

### (3) Olympus IX71 inverted fluorescence with phase-contrast optics (WMB 303)

Objective	Magnification Air/Oil	Numerical Aperture	Working Distance
Plan-Achromat	2x air	0.06 NA	5 mm WD
UPlan FLN	4x PhL	0.13 NA	17 mm WD
Plan-Fluorite	10x PH1 air	0.3 NA	10 mm WD
Plan-FL	20x PH1 air	0.45 NA	6.4-7.6 mm WD
LUC Plan FL	40x PH2 air	0.6 NA	LWD

#### **Light sources**

- Halogen lamp 12V 100W
- EXFO X-Cite lamp

#### **Filter Cubes available:**

Description	Exciter	Emitter	Notes
DAPI/Hoeschst/AMCA	360	460	Excludes wavelengths higher than 490nm
CFP*	438/24	483/32	For cyan fluorescent protein
FITC/GFP/DiO	HQ480/40x	HQ535/50m	
Custom filter set for Hyper imaging	HQ405/40x	HQ535/50m	500dcxr beamsplitter for ratiometric H2O2 imaging
TRITC/DiL	HQ535/50	HQ610/75	
Qdot	E460SPUv	E500LP	

\*Not usually on microscope--must be switched with custom filter set in position #4--see MiM Core staff for CFP use.

#### **Software**

F/DP71 Digital Camera Software, v. 2.2  
Camera  
Olympus DP71 single-CCD color camera  
Total pixels: 1.5 million pixels  
Pixel pitch: 6.45  $\mu\text{m}$  (H) x 6.45  $\mu\text{m}$  (V)

#### **Computer**

Dell Optiplex GX620 MT  
Pentium D 820 dual core 2.8GHz  
160GB SATA HDD  
1 Gb 533mhz DDR2 RAM  
aTI Radeon X300 PCI Express 128 MB video  
NEC ND-3550A CD/DVD $\pm$  Reader/Writer

## (4) Hamamatsu NanoZoomer SQ Whole Slide Scanner for Brightfield Imaging (WMB 303)

### **System specifications**

Imaging of whole slide and tissue sections in brightfield mode only

Specifications		
Scanning speed	20x mode, 15 mm x 15 mm	Approx. 150 s
Objective lens		20x (NA=0.75)
Slide capacity		26 mm x 76 mm/ One glass slide
Scanning resolution/pixel	20x mode 40x mode	0.46 $\mu$ m 0.23 $\mu$ m
Focusing method		Pre-focus map

A free version of the **NDP.view2** is available for download at the following website:

<https://www.hamamatsu.com/us/en/product/type/U12388-01/index.html>

Alternative software:

You can download a free version of the Leica Aperio ImageScope software which will read the Hamamatsu NanoZoomer-SQ files:

<http://www.leicabiosystems.com/digital-pathology/digital-pathology-management/imagescope/>

## (5) Keyence All-in-One Fluorescence System (WMB 303)

### **System specifications**

Imaging of cells and tissue sections on slides and tissue culture dishes in brightfield, phase contrast and fluorescence modes

Objective/Nikon	Magnification Air/Oil	Numerical Aperture	Working Distance
Plan-Apo $\lambda$ 972030	4x air	0.2 NA	20 mm WD
Plan-Apo $\lambda$ 972031	10x air	0.45NA	4.0 mm WD
Plan-Apo $\lambda$ 972032	20x air	0.75 NA	1.0 mm WD
Plan-Fluor ELWD 971963	40x air Ph2	0.60 NA	3.6-2.8 mm WD

### **Light sources**

- LED (3.7 W) transmitted light used in brightfield microscopy capturing images of H+E (or other chromogens) stained slides and in phase contrast observation
- Metal halide lamp (80 W) (OP-87768 BZX) and filter blocks for DAPI, FITC, TRITC and Qdot labeling of fluorescence specimens

### **Filter Cubes available:**

Description	Exciter	DM	Emitter
DAPI OP-87762	360/40 nm	400 nm	460/50 nm
FITC/GFP OP-87763	470/40 nm	495 nm	525/50 nm
TRITC OP-87764	545/25 nm	565 nm	605/70 nm
Qdot LP-UF1*	AT425/50x		ET500lp

\*Not usually on scanner--must be switched with custom filter set in position #4--see MiM Core staff for use.

### **Software**

BZ-X800 Viewer  
BZ-X800 Analyzer  
BZ-X800 Image Converter  
BZ-X800 Wide Image Viewer

### **Camera**

2/3-inch, 2.83 mega pixel monochrome CCD (colored by LC filter)  
Computer—  
Dell Precision 5820  
Intel Xeon Processor W-2123 3.6 GHz  
Memory: 16 GB DDR4 (15.7 GB usable)  
HDD: 1 TB1  
Graphic card: NVIDIA Quadro P400

## (6) Zeiss LSM 800 Airyscan Laser Scanning Confocal Microscope (WMB 303)

System specifications—

Microscope—Zeiss Axio Observer 7 with fluorescence and DIC optics, Definite Focus

Objective/Zeiss #	Magnification Air/Oil	Numerical Aperture	Working Distance
Fluor 100004404943	5x air	0.25 NA	12.5 mm WD
Plan-Apo 100004437585	10x air	0.45 NA	2.0 mm WD
Plan-Apo 100004406846	20x air	0.80 NA	0.55 mm WD
EC Plan-Neofluar 100004398532	40x oil	1.3 NA	0.21 mm WD
Plan-Apo 100004364433	63x oil	1.40 NA	
C-Apo 100004451710	63x water	1.20 NA	

### Light sources

- Halogen lamp 12V 100W
- EXFO X-Cite lamp and filter blocks for DAPI or Hoechst/FITC/Rhodamine labeling of fluorescence specimens

### Lasers

- 405 nm emission line
- 488 nm emission line
- 561 nm emission line
- 640 nm emission line

### Detectors

- TLD brightfield detector
- Two internal GaAsP detectors
- Airyscan Detector 63x

### Software

Zeiss ZEN Blue

MT/Physiology/FRET/FRAP/3.5 SW PKG

### Computer

HP Z240 Tower 400W

Intel Core i5-6500 CPU 3.2 GHz 6MB cache, 16 GB DDR4

2133 RAM (3 free slots, max. RAM 64GB)

HP Z Turbo Drive SSD 256 GB, 4TB 7200 RPM SATA HDD

Slim SuperMulti DVDRW

NVIDIA

Quadro K620 graphics 2 GB DVI/DP

Windows 7 (64 bit)

## (7) Leica TCS SP5 II Confocal Microscope with Tandem Scanner (Conventional and Resonance) and HyD Detectors (WMB 2012)

### System specifications

Microscope—DMI 6000 CS AFC with fluorescence, DIC and phase contrast optics (40x oil only), adaptive focus control, SuperZ Galvo scanning stage and Ludin Cube2 environmental chamber.

Objective/Leica #	Magnification Air/Oil	Numerical Aperture	Working Distance
HC PL APO CS 11506285	10x air	0.40 NA	2.2 mm WD
HC PL APO CS 15506513	20x air	0.70 NA	0.59 mm WD
HCX PL APO 15506331	40x oil	1.3 NA	0.22 mm WD
HCX PL APO CS 11506188	63x oil	1.4-0.6 NA	0.10 mm WD
HCX PL APO CS 11506194	63x GLYCEROL	1.3 NA	0.28 mm WD

### Light sources

- Halogen lamp 12V 100W
- Leica mercury lamp and filter blocks for DAPI or Hoechst/FITC/Rhodamine labeling of fluorescence specimens
- Lasers
  - Diode 50 mW with 405 nm emission line
  - "Blue" argon multi-line 65 mW with 458/476/488/514 nm emission lines
  - "Yellow" diode 20 mW with 561 nm emission line
  - "Red" 10 mW with 633 nm emission line
- Detector Channels
  - TLD brightfield detector
  - One internal detector channel (PMT)
  - Three internal GaAsP detector channels (HyD)

### Software

LAS 3D Software: 3D reconstruction, 3D animation, colocalization

LAS MicroLab Software: FRAP/FRET Acceptor- Photobleaching/Sensitized Emission

### Computer

HPZ800 Workstation with Windows 7 (32 bit)

Intel Six-Core Xeon X5650 2.66 GHz

4 GB RAM

160 GB Raptor 10000 rpm SATA hard disc drive

16X DVD-RW R+ DL Multi Drive

10/100/1000 Ethernet Controller