

# Instrument Details

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# Zeiss 700 Confocal Microscope

Location: HSC (Building 586) Room 56



The LSM 700 laser scanning confocal microscope is the seventh generation of confocal microscopes from Carl Zeiss. The LSM 700 system uses a Zeiss AXIO Observer Z1 inverted microscope with transmitted illumination (HAL 100) and a laser illumination source. The LSM 700 system features easy operation, excellent sensitivity, and a design that can handle complex tasks.

## Main features of Zeiss 700 System:

- Two Photo Multipliers Tube (PMT1 and PMT2) detector unit enables simultaneous 12 bit (4096 intensity levels) acquisition of up to 4 fluorescent channels.

- Confocal scan head unit can provide high-resolution images up to 2048 x 2048 pixels in size.
- Fully automated Zeiss Observer Z1 inverted microscope.
- LED Epifluorescence and HAL100 Brightfield illumination lamps for rapid sample identification and focusing through the eyepiece.
- Filter wheel used for epifluorescence viewing of the sample is currently outfitted with DAPI , FITC (green), and Rhodamine (red) filter cube sets.
- Motorized XY stage with a variety of stage inserts available (slides, dishes, multiwall plates, etc..).
- Zeiss Zen Black multi-platform acquisition software.
- Measurements include: Z stack, Time lapse, Stitching/Tiling, XY positions, and Spectra unmixing

## Suggested Applications:

- 3D Imaging.
- Multichannel fluorescence fixed slide imaging.
- Tiled mosaics.

## Imaging lasers:

Wavelength (nm)	Type	Power	Manufacturer
405	diode	5 mW	Lasos Lasertechnik GmbH
488	diode	10 mW	Lasos Lasertechnik GmbH
555	diode	10 mW	Lasos Lasertechnik GmbH
639	diode	5 mW	Lasos Lasertechnik GmbH

## Objectives:

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
EC Plan Neofluar M27	10X	Air	0.3		0.17	5.2
Pan Apo M27	20X	Air	0.8		0.17	0.55
LD C-Apo Korr M27	40X	Water	1.1	Corr	0.14-0.19	0.62
Pan Apo DIC M27	63X	Oil	1.4		0.17	0.19

# Prairie Ultima 2

Location: HSC Room 48B / 48D

## Main features of Prairie Ultima 2/Multi-Photon Confocal System:

- Six detectors, four reflected mode Photo Multipliers Tube (PMT) detectors and two transmitted mode PMTs for second harmonic and fluorescence detection.
- High NA water immersion optics including 16x PLANAPO LWD Nikon NA 0.8 and a PLANAPO Correction collar LWD 25x NA 1.1, 60x LUMFL water immersion Olympus NA0.8.
- Resonance scanner for high speed imaging timelapse (~200fps depending on format)
- Piezo Z drive for fast z acquisition, 2 inch travel, XY motorized stage
- Fixed (Z) stage with adjustable (2 inch) travel
- Bioscience Tools stage top incubator with heated pad, heated dish
- Mouse Anesthesia system from VetEquip for in vivo applications (Halothane with scrubber)
- Gas supply, O<sub>2</sub>, CO<sub>2</sub>, O<sub>2</sub>/CO<sub>2</sub> mix

## Imaging lasers:

- Coherent Vision II with tuning 705-1060nm pulsed femtosecond range 4000-400mW depending on wavelength

## Suggested Applications:

- Deep live cell imaging of zebrafish, mouse in vivo, organ culture and slices, 3D cell culture
- Multichannel fluorescence in vivo, slices or cultures
- Tiling mosaics of fixed or live samples
- Timelapse of whole mount, in vivo mouse, culture
- Second harmonic imaging of collagen or other ECM

## Objectives:

### 48B:

Objective	Magnification	Immersion	Numerical Aperture	Correction Collar	Coverslip (mm)	Working Distance (mm)
Apo	25	Water, Water Dipping	1.1	Corr	0-0.17	2

### 48D:

Objective	Magnification	Immersion	Numerical Aperture	Correction Collar	Coverslip (mm)	Working Distance (mm)
Plan Apo Lambda	4	Air	0.2			20
Plan Fluor	10	Air	0.3		0.17	16
UPlanFI	10	Air	0.3			
LWD	16	Water Dipping	0.8		0	3
Apo	25	Water, Water Dipping	1.1	Corr	0-0.17	2
Fluor	40	Water Dipping	0.8		0	2

# Nikon A1R Confocal

Location: HSC Room 56

## Main features of System:

- Four Photo Multipliers Tube (PMT) detector unit enables simultaneous 12 bit (4096 intensity levels) acquisition of up to 4 fluorescent channels.
- Fifth transmitted light detector available for simultaneous brightfield imaging of samples while scanning confocally.
- Hybrid confocal scan head unit can provide high resolution images up to 4096 x 4096 pixels in size in conventional galvonometer mode and in high speed resonant mode up to 30 frames per second at 512 x 512 pixels.
- Ultra high speed resonant acquisitions up to 420 frames per second at 512 x 32 pixels.
- Fully automated Nikon Ti-E inverted microscope.
- Epifluorescence and DIC (Nomarski) illumination lamps for rapid sample identification and focusing.
- Filter wheel used for epifluorescence viewing of sample is currently outfitted with with DAPI (blue), FITC (green), and TRITC (red), filter cube sets.
- ASI MS-2000 Motorized XY stage with a variety of stage inserts available (slides, dishes, multiwall plates, etc..).
- MCL Piezo Stage (100um range) for high speed 3D (i.e., Z-stack) volume acquisition.
- Perfect Focus System provides focal depth consistency across varying sample regions of interest.
- Nikon NIS-Elements multi-platform acquisition software.

## Imaging lasers:

- 405nm diode laser
- 488nm Argon gas laser
- 561nm Sapphire diode laser
- 638nm diode laser

## Suggested Applications:

- Multichannel fluorescence and transmitted fixed slide imaging
- Tiling mosaics of fixed or live samples
- Timelapse of dishes or glass bottom well plates

## Objectives:

<b>Objective</b>	<b>Magnification</b>	<b>Immersion</b>	<b>Numerical Aperture</b>	<b>Correction Ring</b>	<b>Coverglass</b>	<b>Working Distance</b>
Plan Apo Lambda	4	Air	0.2			20
Plan Apo Lambda	10	Air	0.45		0.17	4
Plan Apo Lambda	20	Air	0.75		0.17	1
Plan Fluor	40	Oil	1.3		0.17	0.2
Plan Apo Lambda	60	Oil	1.4		0.17	0.13

Other objectives available. Please inquire with Core personnel



# Evos Auto Color and Fluor Microscope

Location: HSC (Building 586) Room 54





The EVOS FL Imaging system is an all-in-one fluorescence microscope designed for efficiency and ease of use. The on-board computer and integrated imaging software allows users to capture and save four channels fluorescence images/data directly from the microscope. The EVOS FL Imaging System is suitable for checking samples before using a high-end microscope system.

## Main features of System:

- Dual 16-bit CCD acquisition cameras (Monochromatic and Color)
- 22" high-resolution touch screen color monitor
- Automated X-Y scanning stage with interchangeable specimen holder inserts. We have available inserts for glass slides, culture dishes, multiwell plates, and T-flasks
- EVOS LED Light Cube Technology. We have following cubes available:  
DAPI, GFP, RFP, Texas Red, and Cy5

## Suggested Applications:

- Fixed and live cell imaging.
- Tissue imaging.
- Sample check before using a high-end microscope system.

## Light Sources:

LED light cubes which combine bright LED illumination with excitation and emission filters. DAPI, CY5, GFP, RFP and Texas Red cubes are available. Four can be installed at one time. Contact Cell Imaging staff to change cubes if needed. A selection guide for matching cubes to dyes is on the ThermoFisher site: [Guide](#)

Cube	Excitation (nm)	Emission (nm)
DAPI	357/44	447/60
GFP	485/25	524/24
RFP	531/40	593/40
Texas Red	585/29	628/32
Cy5	628/40	692/40

## Objectives:

The objectives on the Evos are Long Working Distance, not Coverslip-Corrected. They are optimized for use through vessels with a nominal wall thickness of 0.9-1.5 mm.

Objective	Magnification	Immersion	Numerical Aperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
PlanApo	1.25X	Air	0.04			5.10

Plan Fluor	4X	Air	0.13			17.2
Plan Fluor	10X	Air	0.3		1.2	8.31
Plan Fluor	20X	Air	0.45		1.2	7.11
Plan Fluor	40X	Air	0.65		1.2	2.81

# Zeiss Axio Scan.Z1

Location: HSC (Building 586) Room 60



The Zeiss Axio-Scan.Z1 is a fast and flexible slide scanner that digitizes specimens to produce high-quality virtual slides. In addition to brightfield slide scanning, the Axio-Scan.Z1 uses LED lights to scan up to nine fluorescent channels. Up to 100 slides can be loaded onto the scanner, making it suitable for large projects, including digital archives. Scanned images are saved as CZI files and can be viewed using Zeiss freeware Zen-lite or third-party image analysis programs.

## **Main features of Axio Scan.Z1:**

- Holds up to 100 slides.
- Able to image both bright-field (e.g. H&E slides) and up to nine-colour fluorescent samples.
- Image areas can be detected automatically or marked out, to form montages of the whole sample, or multiple samples on each slide

- Setup wizard to guide users through optimising image acquisition and autofocus parameters.
- Once setup, the system can be left for unattended automated scanning e.g. overnight

## Light Sources:

In addition to an internal lamp for brightfield imaging, the Axio Scan.Z1 has an X-Cite 120LED source for fluorescent imaging.

## Filter cubes for LEDs:

The scanner has a 10 position filter turret to fit most fluorophores. The Zen profile wizard is used to pick filter to match your imaging needs. Alternate filter cubes can be installed for specialty applications. Please consult with Cell Imaging staff for consultation and assistance.

Filter Position	Excitation (nm)	Emission (nm)	Typical Fluorophores	Opal Dye
1	empty	empty	Brightfield	
2	325-375	435-485	DAPI	
3	426-446	465-495	Cyan, Protein	480
4	480-500	510-530	Alexa Fluor 488	520
5	510-530	540-560	Alexa Fluor 489	540
6	538-562	570-640	HE, DsRed, Alexa Fluor 555	570
7	568-592	610-640	Alexa Fluor 568	620
8	610-630	645-675	Alexa Fluor 660	650
9	625-655	666-715	Cy5	
10	650-680	695-755	Alexa Fluor 680	690

## Objectives:

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
EC Plan-Neofluar M27	2.5X	Air	0.085		0.17	8.8
Fluor M27	2.5X	Air	0.12		0.17	8.7
Fluar M27	5X	Air	0.25		0.17	12.5
Plan Apo M27	10X	Air	0.45		0.17	2.1
Plan Apo M27	20X	Air	0.8		0.17	0.55

Plan Apo Korr M27	40X	Air	0.95		0.13-0.21	0.25
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# Nikon Automated Widefield Microscope

Location: HCI Room 1430

## Main features of System:

- Widefield light pathway employs a high sensitivity Andor Zyla CMOS camera
- Sola automated LED lightsource for both widefield fluorescence and transmitted illumination pathways
- Fully automated Nikon Ti-E inverted microscope
- Perfect Focus System provides focal depth consistency across varying sample regions of interest
- Motorized Prior II XY stage with a variety of stage inserts available (slides, dishes, multiwall plates, etc..)
- Nikon NIS-Elements multi-platform acquisition software capable of Tiling, timelapse, scripting, analysis and advanced image processing.
- Stage Incubator: OKOLAB, CO<sub>2</sub> and Humidity with either dish or plate adaptor

## Suggested Applications:

- Multichannel fluorescence and transmitted fixed slide imaging
- Tiling mosaics of fixed or live samples
- Timelapse of dishes or glass bottom well plates

## Objectives:

Objective	Magnification	Immersion	Numerical Aperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
Plan Apo Lambda	4	Air	0.2			20
Plan Apo Lambda	10	Air	0.45		0.17	4
Plan Apo Lambda	20	Air	0.75		0.17	1
S PLAN Fluor ADM ELWD	20	Air	0.45	Corr	0-2.0	8.2-6.9

Plan Apo Lambda	60	Oil	1.4		0.17	0.13
Plan Apo Lambda	100	Oil	1.45		0.17	0.13

Other objectives available. Please inquire with Core personnel



# Leica SP8 White Light System

Location: HCI Room 1480

## **Main features of Leica SP8 White Light System:**

- Five detectors, Two Photo Multipliers Tube (PMT) detectors and three HyD detectors for enhanced sensitivity and dynamic range for 5 total fluorescent channels.
- Transmitted light detector available for simultaneous brightfield imaging of samples while scanning confocally.
- Hybrid confocal scan head unit can provide high resolution images up to 4096 x 4096 pixels in size in conventional galvanometer mode and in high speed resonant mode up to 30 frames per second at 512 x 512 pixels.
- Ultra high speed resonant acquisitions up to 420 frames per second at 512 x 32 pixels.
- Fully automated Leica DM8 microscope
- Epifluorescence and DIC (Nomarski) illumination lamps for rapid sample identification and focusing.
- Filter wheel used for epifluorescence viewing of sample is currently outfitted with with DAPI (blue), FITC (green), and TRITC (red), filter cube sets.
- Laser autofocus system provides focal depth consistency across varying sample regions of interest.
- OkoLab heating/cooling stage top incubator with CO<sub>2</sub> and humidity. Plates and dishes with glass bottoms.

## **Imaging lasers:**

- 405nm diode laser
- 488nm Argon gas laser
- White Light continuously tunable pulsed laser 440-700nm

## **Suggested Applications:**

- Multichannel fluorescence and transmitted fixed slide imaging
- Tiling mosaics of fixed or live samples
- Timelapse of dishes or glass bottom well plates

## **Objectives:**

<b>Objective</b>	<b>Magnification</b>	<b>Immersion</b>	<b>Numerical Aperture</b>	<b>Correction Ring</b>	<b>Coverglass (mm)</b>	<b>Working Distance (mm)</b>
HC PL APO CS2	10	Air	0.4			2.74
HC PL APO CS2	20	Either water, glycerine, or oil	0.75	Corr		0.66
HC PL APO CS2	20	Air	0.75		0.17	0.62
HC PL APO CS2	40	Water	1.1	Corr	0.14-0.18	0.65
HC PL APO CS2	40	Oil	1.3		0.17	0.24
HC PL APO CS2	60	Oil	1.4		0.17	0.14

Other objectives available. Please inquire with Core personnel

# Leica SP8 405-488-561-633

## Laser Confocal

Location: HCI Room 1440

### **Main features of Leica SP8 White Light System:**

- Five detectors, Two Photo Multipliers Tube (PMT) detectors and three HyD detectors for enhanced sensitivity and dynamic range for 5 total fluorescent channels.
- Transmitted light detector available for simultaneous brightfield imaging of samples while scanning confocally.
- Hybrid confocal scan head unit can provide high resolution images up to 4096 x 4096 pixels in size in conventional galvanometer mode and in high speed resonant mode up to 30 frames per second at 512 x 512 pixels.
- Ultra high speed resonant acquisitions up to 420 frames per second at 512 x 32 pixels.
- Fully automated Leica DM8 microscope
- Epifluorescence and DIC (Nomarski) illumination lamps for rapid sample identification and focusing.
- Filter wheel used for epifluorescence viewing of sample is currently outfitted with with DAPI (blue), FITC (green), and TRITC (red), filter cube sets.
- Laser autofocus system provides focal depth consistency across varying sample regions of interest.
- OkoLab heating/cooling stage top incubator with CO<sub>2</sub> and humidity. Plates and dishes with glass bottoms.
- z-galvo

### **Imaging lasers:**

- 405nm diode laser
- 488nm Argon gas laser
- White Light continuously tunable pulsed laser 440-700nm
- 561
- 633

### **Suggested Applications:**

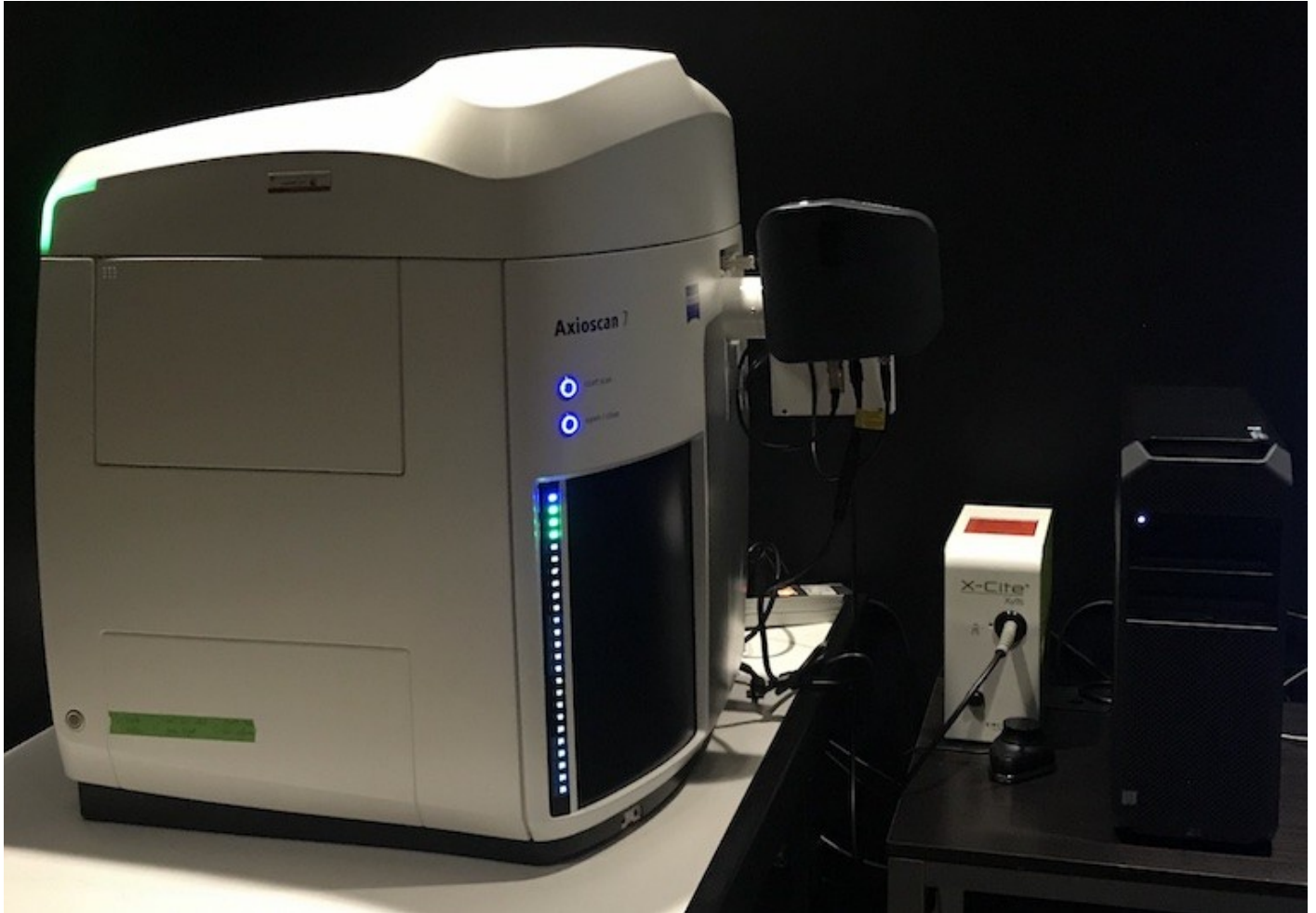
- Multichannel fluorescence and transmitted fixed slide imaging
- Tiling mosaics of fixed or live samples
- Timelapse of dishes or glass bottom well plates

## Objectives:

Objective	Magnification	Immersion	Numerical Aperture	Correction Collar	Coverslip (mm)	Working Distance (mm)
HC PL APO CS2	10	Air	0.4			2.74
HC PL APO CS2	20	Either water, glycerine, or oil	0.75	Corr		0.66
HC PL APO CS2	20	Air	0.75		0.17	0.62
HC PL APO CS2	40	Water	1.1	Corr	0.14-0.18	0.65
HC PL APO CS2	40	Oil	1.3		0.17	0.24
HC PL APO CS2	63	Oil	1.4		0.17	0.14

# Zeiss Axioscan 7

Location: HCI Room 1470



The Zeiss AxioScan 7 is a fast and flexible slide scanner that digitizes specimens to produce high-quality virtual slides. In addition to brightfield slide scanning, the Axioscan 7 can scan up to five fluorescent channels using fast switching LED lights. Up to 100 slides can be loaded onto the scanner, making it suitable for large projects, including digital archives. Scanned images are saved as CZI files and can be viewed using Zeiss freeware Zen-lite or third-party image analysis programs.

## Main Features of the Axioscan 7:

- Holds up to 100 slides.
- Able to image both bright-field (e.g. H&E slides) and up to nine-colour fluorescent samples.
- Image areas can be detected automatically or marked out, to form montages of the whole sample, or multiple samples on each slide

- Setup wizard to guide users through optimising image acquisition and autofocus parameters.
- Once setup, the system can be left for unattended automated scanning e.g. overnight

## Suggested Applications:

- Fixed slides.

## Configurations:

The Axioscan 7 has a replaceable filter turret and can be switched between two light sources. The 10 position filter cube turret is typically used with the Colibri 7 switchable LED source. The fast filter wheel is typically used with the X-Cite Xylis LED source.

Configuration	Light Source	Filter Set
1	Colibri 7	Filter Cubes
2	X-Cite Xylis	Fast Filter Wheel

Only Cell Imaging staff are permitted to switch between configurations. Please schedule our time and plan accordingly.

## Light Sources:

### Colibri 7:

The Colibri 7 has 6 LEDs with excitation filters to provide 7 excitation bands. (One LED has a motorized filter to split it into two bands.)

Excitation Bands (There is one too many here)

Band	Wavelength / Bandwidth (nm)	Some typical fluorophores
UV	385/30	API, Hoechst 33342, Hoechst 33258, Alexa Fluor 350, Alexa Fluor 405, Indo-1, eBFP / BFP, eGFP (wt), True Blue
V	423/44	Pacific Blue, Lucifer Yellow, Alexa Fluor 433, eCFP, Cerulean
B	469/38	FM1-43, Cy2, eGFP, NBD, MitoTracker Green, Alexa Fluor 488, BCECF, Calcein, DiO SNAFL, YO-Pro-1, Nissl, LysoSensor Green, mHoneydew, FITC / Fluorescein, Kaede (green / red), PerCP, YoYo-1, FuraRed

C	511/44	Rhodamine 123, Fluo-4, Oregon Green BAPTA, Sytox Green, eYFP, FM4-64, Eosin/HE, Acridine Orange, JC1, Bodipy FL, Propidium Iodide, Spectrum Green, Calcium Green
G	555/30	TRITC, 7-AAD, Cy3, tdTomato, Alexa Fluor 546, Alexa Fluor 555, DsRed, mOrange, TagRFP, SNARF, DyLight 549, Spectrum Orange
Y	590/27	MitoTracker RED FM/CMXRos, txRed, mCherry, mRFP1, Cy3.5, Rhodamine B, Alexa Fluor 568, Dylight 594, Alexa Fluor 594, Bodipy TR
R	631/33	Alexa Fluor 633, Alexa Fluor 647, Cy5, DRAQ5, ToTo-3, ATTO-655, MitoTracker DeepRed, APC, ATTO-647N
FR	735/40	Alexa Fluor 750, Alexa Fluor 790, Cy7, Cy7.5

## X-Cite Xylis:

The X-Cite Xylis XT720L is a broad spectrum illuminator with a range from 380-770nm. It has peaks at 385, 430, 475, 545, 635, 735nm.

## Filters:

### Filter Cubes:

In multi-band fluorescence imaging, the filter turret has to move between positions for each band. This is usually done on a per-tile basis. At about 400ms per move, this can add up, especially for a large scan at higher magnification. The Axioscan 7 has 2 multi-band cubes. If these can be used, it can reduce or eliminate these moves and reduce scan time. These can be used on the Axioscan 7 because it has the Colibri 7 switching LED source.

Filter No	Fluorochrome	Excitation (nm)	Beamsplitter (nm)	Emission (nm)
1	Empty (Brightfield)			
2	HE GFP	450-490	495	500-550



3	HE DsRed	538-562	570	570-640
4	Cy5	625-655	660	665-715
5	HE BFP	370-410	420	430-470
6	HE DAPI/GFP/Cy3.5/Cy7	375-395 455-483 583-600 720-750	405 493 611 762	410-440 501-547 618-650 770-800
7	HE DAPI/GFP/Cy3.5/Cy5/ Cy7	370-400 450-488 540-570 614-647 720-750	405 493 575 654 761	412-438 501-527 582-601 662-700 770-800
Pol	Circular polarizer and analyzer			
ND	6% Neutral Density Filter			

## Fast Filter Wheel:

The fast filter wheel moves between filter positions about 10 times faster than the filter cube turret.

Need information here

Filter	Pass Peak and Width	Typical fluorophores
Empty (Brightfield)		
Single Channel 1		
Single Channel 2		
Single Channel 3		
Dual Channel 4		
Dual Channel 5		

## Objectives:

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)

Fluar M27	5X	Air	0.25		0.17	12.5
Pan Apo M27	10X	Air	0.45		0.17	2.1
Pan Apo M27	20X	Air	0.8		0.17	0.55
Pan Apo Korr M27	40X	Air	0.95		0.13-0.21	0.25
EC Pan-Neofluar Pol M27	20X	Air	0.5		0.17	2

# Zeiss 880 Airy Scan

Location: CSC Room 032



## Main features of Zeiss 880 Airy Scan System:

- Five detectors, Three Photo Multipliers Tube (PMT) detectors and two GaSP detectors for enhanced sensitivity and dynamic range for 5 total fluorescent channels.
- Transmitted light detector available for simultaneous brightfield imaging of samples while scanning confocally.
- AIRY scan detector capable of super resolution imaging
- Fast AIRY scan system for high speed super resolution imaging timelapse
- Epifluorescence and DIC (Nomarski) illumination lamps for rapid sample identification and focusing.

- Filter wheel used for epifluorescence viewing of sample is currently outfitted with with DAPI (blue), FITC (green), and TRITC (red), filter cube sets.
- Laser autofocus system provides focal depth consistency across varying sample regions of interest.
- Piezo Z stage for fast z acquisition
- IBIDI stage top incubator with temperature, CO2 and humidity. Plates and dishes with glass bottoms.

## Imaging lasers:

- 405nm diode laser
- 488nm Argon gas laser
- 561nm diode
- 638nm diode

## Suggested Applications:

- Multichannel fluorescence and transmitted fixed slide imaging
- Tiling mosaics of fixed or live samples
- Timelapse of dishes or glass bottom well plates

## Objectives:

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
Plan Apo M27	5	Air	0.16		0.17	12.1
EC Plan-Neofluar M27	10	Air	0.3		0.17	5.2
Plan Apo M27	20	Air	0.8		0.17	0.55
Plan Apo M27	40	Oil	1.3		0.17	0.21
Plan Apo DIC M27	63	Oil	1.4		0.17	0.19
Calibration Apo DIC M27						

# StedyCon

Location: CSC Room 30

## Main features of StedyCon:

- STEDYCON from Abberior is a new class of nanoscope with multicolor confocal and STED (Stimulated emission depletion) capabilities. The lateral STED resolution could reach 30nm depending on dyes and objectives used. The acquired STEDYCON system is fitted on a Nikon Ti-S-E inverted microscope from a camera port and equipped with four excitation lasers: 405 nm CW and 488, 561, 640 nm pulse laser.
- The STED process is applied by a 775 nm pulse laser. Four highly sensitive single-photon-counting Avalanche photodiode detectors (APD) are mounted.
- Two STED and four confocal imaging channels can be detected. A 100X/NA=1.45 oil immersion lens and other low magnification lens are provided to satisfy versatile measurements.
- An XY stage from Marzhauser and an ultra-fast and precise Piezo Z stage from PIFOC are mounted. Browser-based acquisition software is installed on a powerful PC with a Windows 10 system.
- Other advanced functions including Z stack, multipositioning, time series, and tiling and stitching can be performed.

## Objectives:

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
Plan Apo Lambda	4X	Air	0.2			20
Okan-Neofluar	5X	Air	0.15		0.17	13.6
Plan Apo	10X	Air	0.45		0.17	4
PlanApo Lambda	20X	Air	0.75		0.17	1
Plan Apo Lambda	60X	Oil	1.4		0.17	0.13
Plan Apo Lambda	100x	Oil	1.45		0.17	0.13



# Olympus FV1000 Confocal Microscope

Location: CSC Room 32

## Main features of System:

- Three standard Photo Multipliers Tube (PMT) light detectors with two of the channels having tunable spectral bandwidths.
- Simultaneous transmitted light or DIC imaging while scanning confocally.
- Fully automated Olympus IX81 inverted microscope.
- Additional epifluorescence and DIC (Nomarski) illumination lamps for rapid sample identification and focusing.
- Motorized Prior II XY stage with a variety of stage inserts available (slides, dishes, multiwall plates, etc..).
- Olympus FV10-ASW 3.1 confocal imaging software

## Imaging lasers:

- 405nm diode laser
- 488nm Argon gas laser
- 543nm Helium-neon gas laser
- 633nm Helium-neon gas laser

## Objectives:

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
UPlanSApo	10X	Air	0.4		0.17	3.1
UPlanApo	20X	Air	0.7		0.17	0.65
UApo	40X	Oil	1.35	Corr	0.17	0.1
PlanApo	60X	Water	1.2	Corr	0.13-0.21	0.28
PlanApo	60X	Oil	1.4		0.17	0.12





# Delta Vision Widefield

Location: EEJMRB Room 5100



## Hardware:

- Customized Olympus IX73 microscope base w/ TruLight Illuminator
- Olympus X-line PlanApo Objectives 4x, 10x, 20x Dry and 60x Oil
- Ultimate Focus laser-based autofocus system
- Custom XYZ Stage 106mm x 70mm x 7mm
- sCMOS Camera 2040 x 2040 pixels
- 7-channel solid state illuminator
- DIC Transmitted Light Imaging
- Environmental Chamber

## Primary applications:

- 2D and 3D Multi-Channel Fluorescence Imaging
- 3D Restorative Deconvolution
- Time-Lapse Imaging
- Multipoint Imaging

## Objectives:

Objective	Magnification	Immersion	Numerical Aperture	Correction Ring	Coverslip (mm)	Working Distance (mm)

UPlanXApo	4	Air	0.16			13
UPlanXApo	10	Air	0.4		0.17	3.1
UPlanXApo	20	Air	0.8		0.17	0.6
UPlanXApo	40	Oil	1.4		0.17	0.12
UPlanXApo	60	Oil	1.42		0.17	0.15

# Leica Spinning Disk Confocal

Location: EEJMRB Room 5122

## Hardware:

- Leica DMI8 motorized microscope with adaptive focus tracking
- ASI motorized stage with Piezo Z
- W-1 large format spinning disk confocal with beam homogenizer
- Andor 1024 x 1024 EMCCD camera
- VisiTron 2D FRAP unit
- 405,488,561,640nm laser lines for DAPI, GFP, RFP, Cy5, and similar fluorochromes
- W-View image splitter for dual channel simultaneous imaging
- LED based widefield fluorescence
- Stage top incubator system
- VisiView acquisition software

## Primary applications:

- 2D and 3D Multi-Channel Fluorescence Imaging
- 3D Restorative Deconvolution
- Time-Lapse Imaging
- Multipoint Imaging
- Sample images before (A) and after (B) deconvolution

## Objectives:

Objective	Magnification	Immersion	Numerical Aperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
HC PL APO CS2	10	Air	0.4			2.74
HCX PL APO CS	20	Air	0.75		0.17	0.62
HC PL APO CS2	40	Water	1.1	Corr	0.14-0.18	0.65
HC PL APO CS2	63	Oil	1.4		0.17	0.14



# Nikon Ring TIRF or Spinning Disk Confocal

Location: EEJMRB Room 3532

Objective	Magnification	Immersion	Numerical Apperture	Correction Ring	Coverglass (mm)	Working Distance (mm)
Plan Fluor	10	Air	0.3		0.17	16
Plan Fluor	10	Air	0.3		0.17	16
Plan Apo	20	Air	0.75		0.17	1
Apo TIRF	60	Oil	1.49	Corr	0.13-0.19	0.16-0.07
Plan Apo Lambda	60	Oil	1.49		0.17	0.13
Apo TIRF	100	Oil	1.49	Corr	0.13-0.19	0.16-0.09