

Microscope Specs

Zeiss LSM 900 Confocal

Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance	Condenser Turret	
						Bright Field	DIC
EC Plan-Neofluar (420330-9901-000000)	5x	0.16	AIR	1	18.5 mm	BF	no
Plan-Apochromat (420640-9900-000)	10x	0.45	AIR	1	2.0 mm	BF	DIC II
Plan-Apochromat (420650-9903-000)	20x	0.80	AIR	1	0.55 mm	BF	DIC II
C-Apochromat W (421767-9973-799)	40x W	1.2	WATER (Immersion)	1.33	0.28 mm	BF	DIC III*
C-Apochromat W (421787-9970-000)	63x W	1.2	WATER (Immersion)	1.33	0.28 mm	BF	DIC III
Only one of objectives below is usually installed at a time							
W N-Achroplan (420957-9900)	20x WD	0.5	WATER (Dipping)	1.33	2.6 mm	BF	no
Alpha Plan-Apochromat DIC Oil (420792-9800-000)	100x	1.46	OIL (Immersion)	1.518	0.10 mm	BF	DIC III

*DICIII slider for the 40x Water objective is usually OUT for AiryScan confocal use. If you would like to do DIC, you must add the slider. Please remove and put away when you are finished. The 40x and 63x C-Apochromat objectives use **WATER instead of OIL** (do not immerse or dip objective in water). The 20x/0.5 WD 2.6 M27 W N-Achroplan objective is for **dipping directly into the water/medium** on the slide or petri dish. Only 6 objectives can be installed at a time - **please see Faye Rosin if you would like to change any objective.**

Installed on July 8, 2022

Confocal Imaging:

Microscope: Upright AxioImager.Z2

Software: Zen 3.5 with Z-stack, time-lapse, multichannel, tiles modules

Dectors: Airyscan 2, PMT

Laser Lines:

1. 405nm (e.g. DAPI)
2. 488nm (e.g. GFP, FITC, CY2)
3. 561nm (e.g. DsRed, CY3, mCherry)
4. 640nm (e.g. CY5)

Wide field imaging (Brightfield/DIC/fluorescence):

Microscope: Upright AxioImager.Z2

Software: Zen 3.5 with Z-stack, time-lapse, multichannel, tiles modules

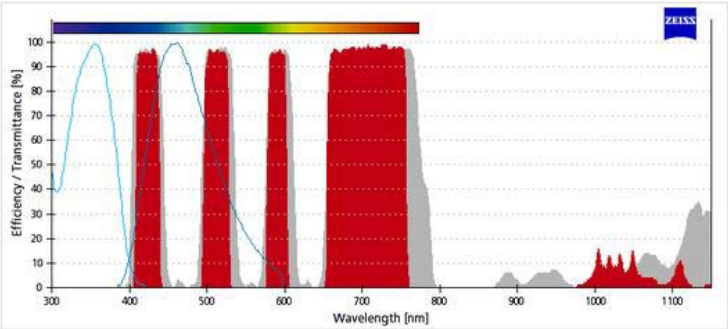
Camera: AxioCam 712 Color

Fluorescent Light Source: Colibri 7 Type R[G/Y]CBV-UV

Filters:

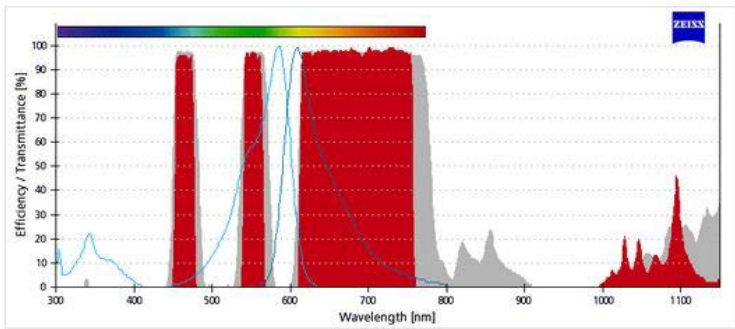
Filter Set	Product number	Excitation wavelength (Specified in software)	Beamsplitter	Emission Wavelengths (all collected)	For use with (example dyes)
Filter Set 90 HE LED	489090-9110-000	BP 385/30	QBS 405 + 493 + 575 + 653	QBP 425/30	DAPI (wide)
		BP 469/38		+514/30	GFP (AF488/FITC/EGFP)
		BP 555/30		+592/25	RFP/Cy3
		BP 631/33		+709/100	Cy5
Filter Set 91 HE LED	489091-9110-000	BP 423/44	TBS 450 +538 +610	TBP 467/24	CFP
		BP 511/44		+555/25	YFP
		BP 591/27		+687/145	mCherry

You can specify the excitation wavelength in Colbri 7, but all emission wavelengths shown in red below are collected for each of filter set.



Important Note

Selection: Filter Set 90 HE LED



Important Note

Selection: Filter Set 91 HE LED

Zeiss Axioimager-AUTO (formally LSM 700 confocal)

Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance	Condenser Turret	
						Bright Field	DIC
EC Plan-Neofluar (420320-9901-000000)	2.5x	0.075	AIR	1	9.5 mm	BF	no
Plan-Apochromat (420640-9900-000)	10x	0.45	AIR	1	2.1 mm	BF	DIC II
Plan-Apochromat (420650-9901-000)	20x	0.80	AIR	1	0.55 mm	BF	DIC II
Plan-Apochromat Korr (420660-9970-000)	40x	0.95	AIR	1	0.16 mm	BF	DIC III
LD C-Apochromat W (421867-9970)	40x W	1.1	WATER	1.33	0.62 mm	BF	DIC III
Plan-Apochromat DIC Oil (420782-9900-000)	63x	1.40	OIL	1.518	0.19 mm	BF	DIC III
Additional objectives that can be installed							
W N-Achroplan (420957-9900)	20x WD	0.5	WATER (Dipping)	1.33	2.6 mm	BF	no
Alpha Plan-Apochromat DIC Oil (420792-9800-000)	100x	1.46	OIL (Immersion)	1.518	0.10 mm	BF	DIC III

The 40x LD C-Apochromat objective uses **WATER instead of OIL** (do not immerse or dip objective in water). The 20x/0.5 WD 2.6 M27 W N-Achroplan objective is for **dipping directly into the water/medium** on the slide or petri dish. Only 6 objectives can be installed at a time - **please see Faye Rosin if you would like to change any objective.**

Microscope: Upright AxioImager.Z2

Wide field imaging (Brightfield/DIC/fluorescence):

Software: Zen Blue (2.3) with Z-stack, time-lapse, multichannel, tiles modules

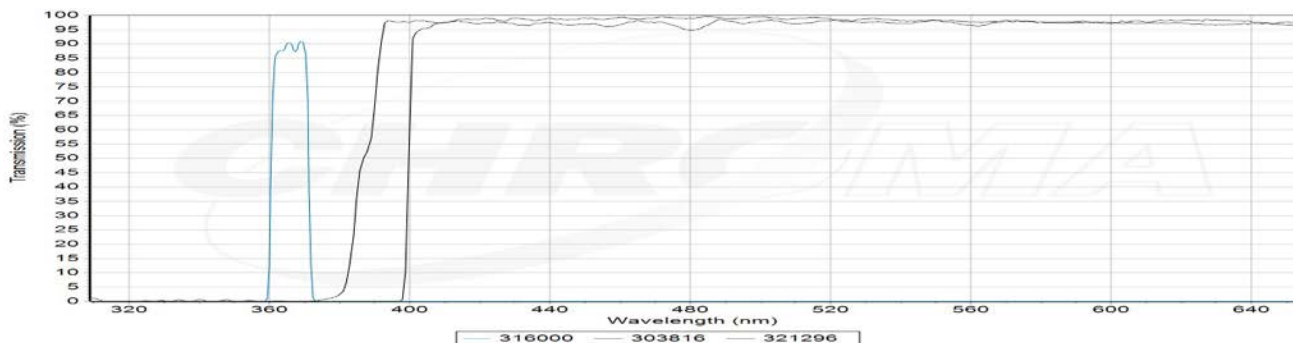
Camera: AxioCam 512 Color

Fluorescent Light Source: Lumencor SOLA-365-SE light engine

Filters:

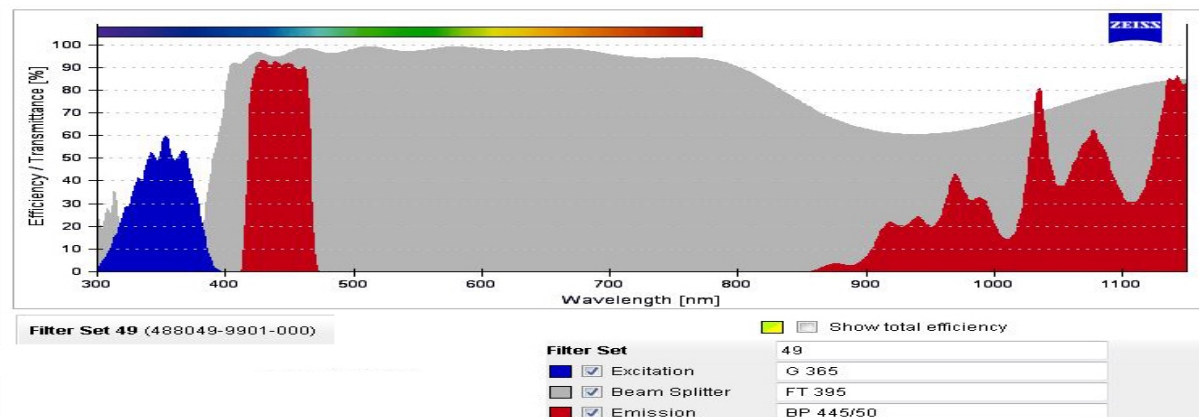
Position 1: DAPI narrow - Chroma Custom Set

Excitation: 365/10x; dichroic mirror: T 387 LP; Emission filter: 400 LP

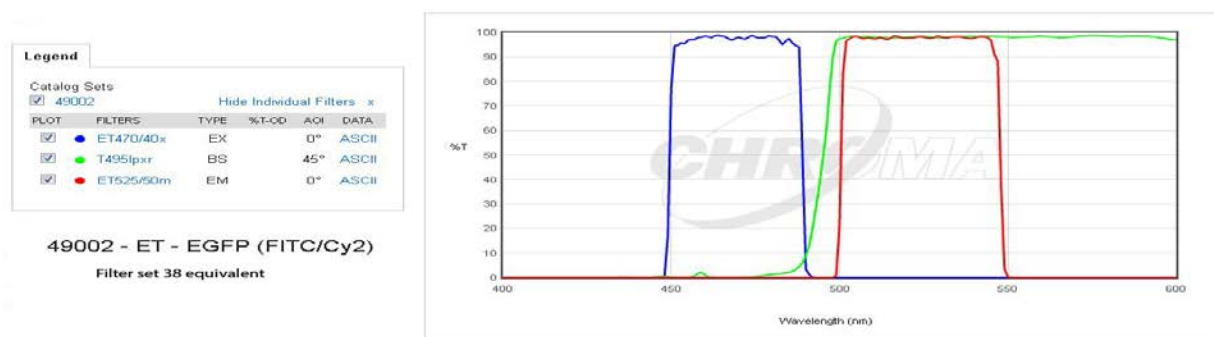


Position 2: DAPI wide - Zeiss Filter set 49 (488049-0000)

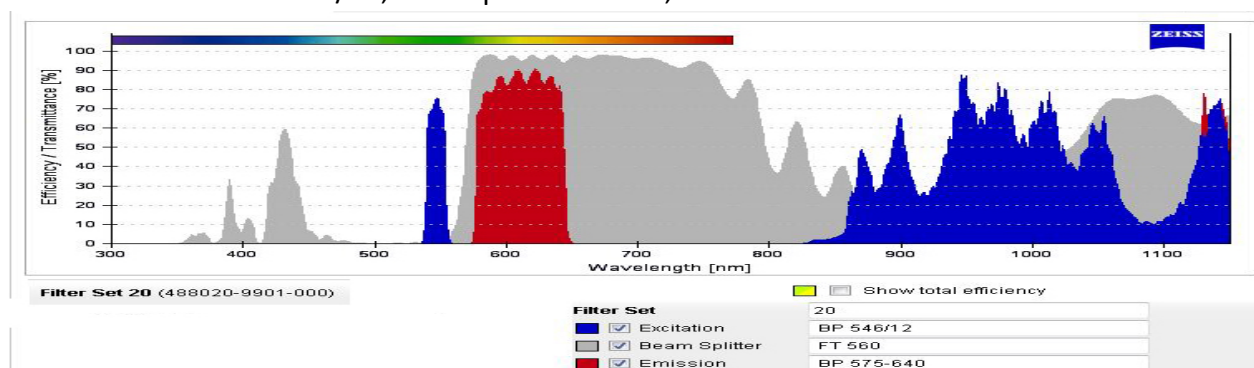
Excitation: G 365; Beamsplitter: FT 395; Emission: BP 445/50



Position 3: GFP - AF488/FITC/EGFP minus chlorophyll auto-fluorescence - Chroma filter set 49002
 Excitation: BP 470/40; Beamsplitter: T 495; Emission: BP 525/50



Position 4: Rhodamine - Zeiss Filter set 20 (488020-0000)
 Excitation: BP 546/12; beamsplitter: FT 560; emission: BP 575-640



Position 5: DIC Analyzer – for DIC imaging with transmitted light

Position 6: Empty – for bright-field and dark-field imaging with transmitted light

Previous specs:

Before July 8, 2022

Confocal Imaging:

Confocal Software: Zen Black (2.3)

Laser Lines:

1. 405nm (e.g. DAPI)
2. 488nm (e.g. GFP, FITC, CY2)
3. 555nm (e.g. DsRed, CY3, mCherry)
4. 639nm (e.g. CY5)

Wide field imaging: 2.5x objective not installed; 40x/1.3 Oil DIC M27 Plan-Aprochromat installed

Before March 1, 2018

Confocal Software: Zen Black 2010

Wide field imaging Software: AxioVision 4 software, mosaiX and Z-Stack modules

Before May 4, 2017:

Camera: AxioCam HRC

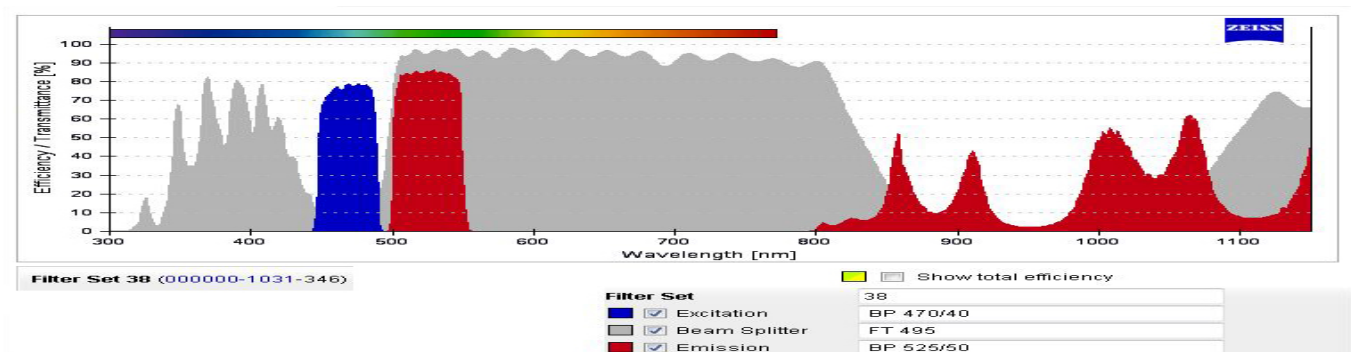
Before March 21, 2015:

Fluorescent light source: HBO 100-W

Before April 1, 2015:

Filters: GFP - Zeiss Filter set 38 (1031-346)

Excitation: BP 470/40; Beamsplitter: FT 495; Emission: BP 525/50



Zeiss AxioImager (A2) – Manual stage

Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance	Condenser Turret	
						Bright Field	DIC
EC Plan-Neofluar (420330-9901-000000)	5x	0.16	AIR	1	18.5 mm	H	no
Plan-Apochromat (420640-9900-000000)	10x	0.45	AIR	1	2.0 mm	H	II
Plan-Apochromat (420650-9901-000000)	20x	0.80	AIR	1	0.55 mm	H	II
Plan-Apochromat Korr (420660-9970-000)	40x	0.95	AIR	1	0.25 mm	H	III
Plan-Neofluar Oil (440405)	40x	1.3	OIL	1.518	0.21 mm	H	no
Plan-Apochromat DIC Oil (420782-9900-000000)	63x	1.40	OIL	1.518	0.19 mm	H	III
Additional objectives that can be installed							
W N-Achroplan (420957-9900)	20x WD	0.5	WATER (Dipping)	1.33	2.6 mm	BF	no
Alpha Plan-Apochromat DIC Oil (420792-9800-000)	100x	1.46	OIL (Immersion)	1.518	0.10 mm	BF	III

Camera: AxioCam 512 Color

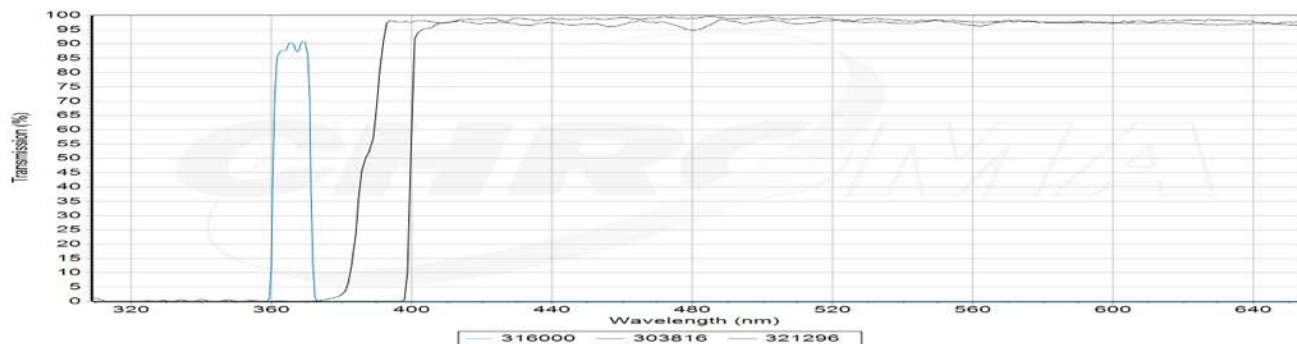
Software: Zen Blue Pro with Multichannel

Fluorescent Light Source: Lumencor SOLA-365-SE light engine

Filters:

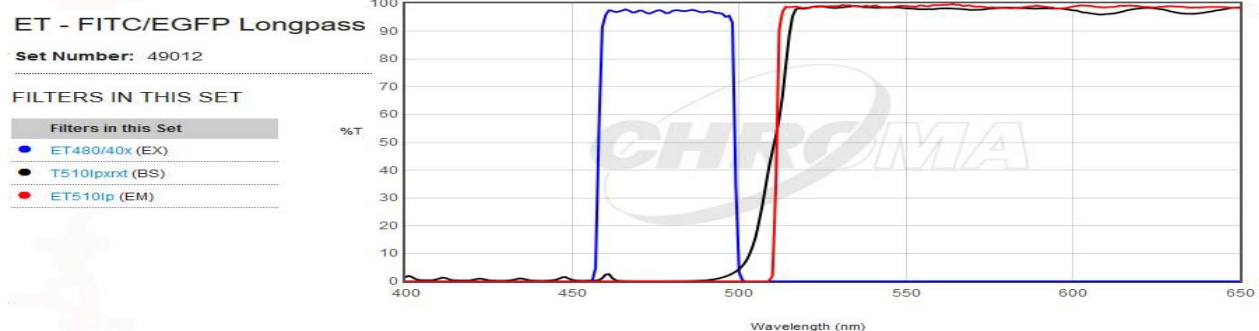
Position 1: DAPI narrow - Chroma Custom Set

Excitation: 365/10x; dichroic mirror: T 387 LP; Emission filter: 400 LP



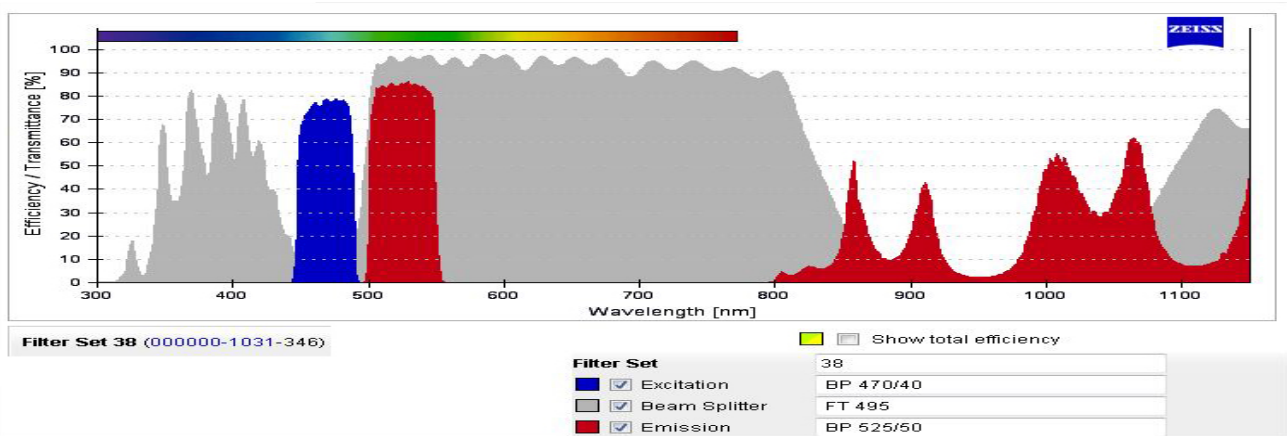
Position 2: FITC – AF488/FITC/EGFP plus chlorophyll auto-fluorescence - Chroma Filter set 49012

Excitation: BP 480/40; Beamsplitter: FT 510; Emission: 510 LP



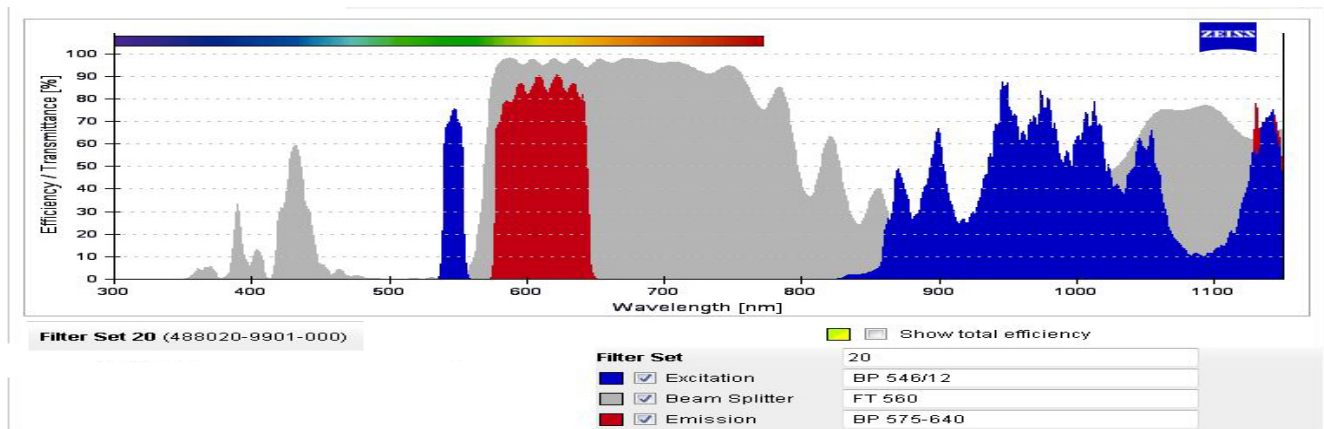
Position 3: GFP - AF488/FITC/EGFP minus chlorophyll auto-fluorescence - Zeiss Filter set 38 (1031-346)

Excitation: BP 470/40; Beamsplitter: FT 495; Emission: BP 525/50



Position 4: Rhodamine – Zeiss Filter set 20 (488020-0000)

Excitation: BP 546/12; beamsplitter: FT 560; emission: BP 575-640



Position 5: DIC Analyzer – for DIC imaging with transmitted light

Position 6: Empty – for bright-field and dark-field imaging with transmitted light

Previous specs:

Before July 8, 2022:

Objective: 2.5x EC Plan-Neofluar, (420320-9901-000000), moved to Axioimager-Auto; No 40x Oil objective

Before March 22, 2018:

Camera: AxioCam HRc

Software: Zen Blue light

Fluorescent Light Source and filters: NONE

Before May 4, 2017:

Software: AxioVision 4

Zeiss Axiophot

Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance	Condenser Turret	
						Bright Field	DIC
Plan-Neofluar (440320)	5x	0.15	AIR	1	13.6 mm	H	no
Plan-Neofluar Pol (440333)	10x	0.30	AIR	1	5.5 mm	H	DIC .3-.4
Plan-Neofluar Pol (440343)	20x	0.50	AIR	1	2.0 mm	H	DIC .5-1.4
Plan-Neofluar Pol (440353)	40x	0.85	AIR	1	0.33 mm	H	DIC .5-1.4
Plan-Apochromat DIC Oil (440762)	63x	1.40	OIL	1.518	0.19 mm	H	DIC .5-1.4

Camera: AxioCam 512 Color

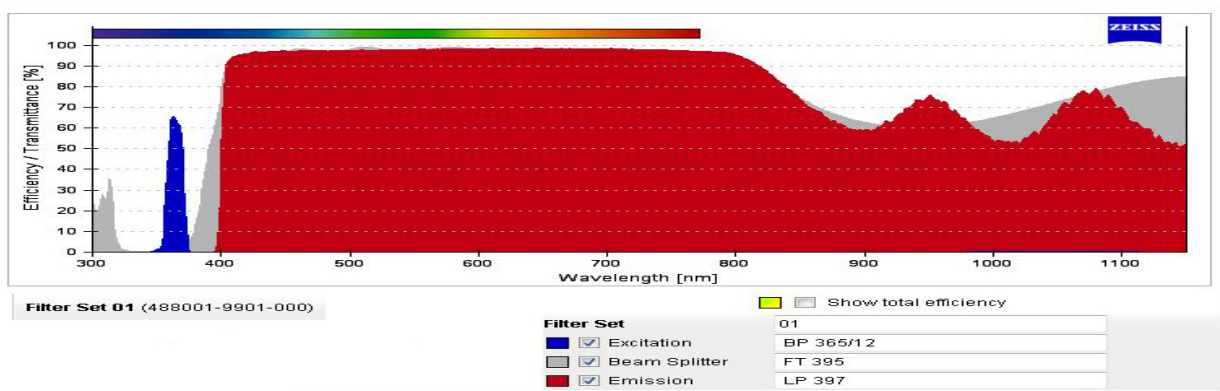
Software: Zen Blue with multichannel module

Fluorescent Light Source: Lumencor SOLA-365-SE light engine

Fluorescent Filters:

Position I: DAPI narrow - Zeiss Filter set 1 (48702)

Excitation: 365/12; dichroic mirror: FT 395; Emission filter: LP397

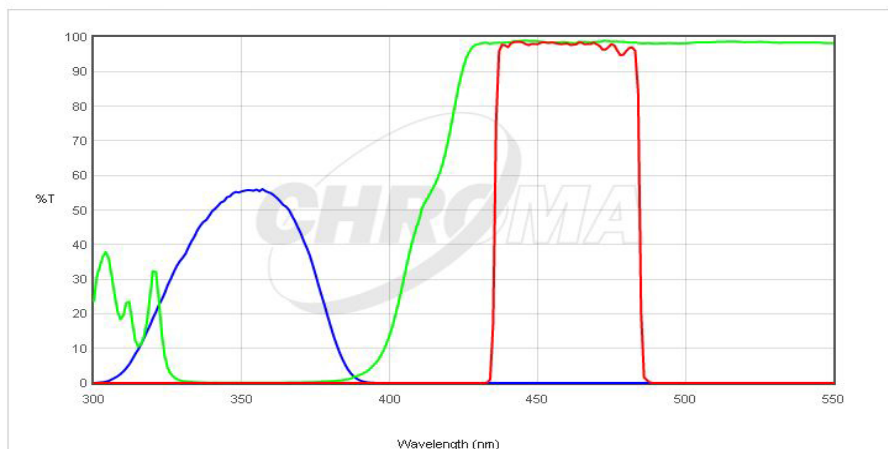


Position II: DAPI wide - Chroma Filter Set 49000

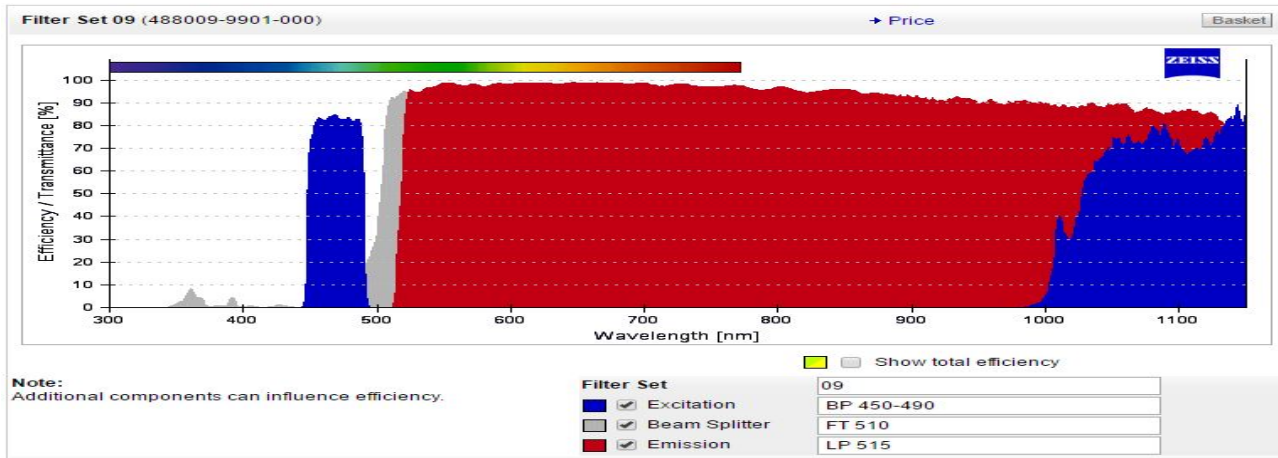
Excitation: 350/50; dichroic mirror: 400; Emission filter: 460/50

Legend					
Catalog Sets					
☒ 49000 Hide Individual Filters x					
PLOT	FILTERS	TYPE	%T-OD	AOI	DATA
☒	AT350/50x	EX	48.30 T at 368nm	0°	ASCII
☒	T400lp	BS	0.15 T at 368nm	45°	ASCII
☒	ET460/50m	EM	0.00 T at 368nm	0°	ASCII

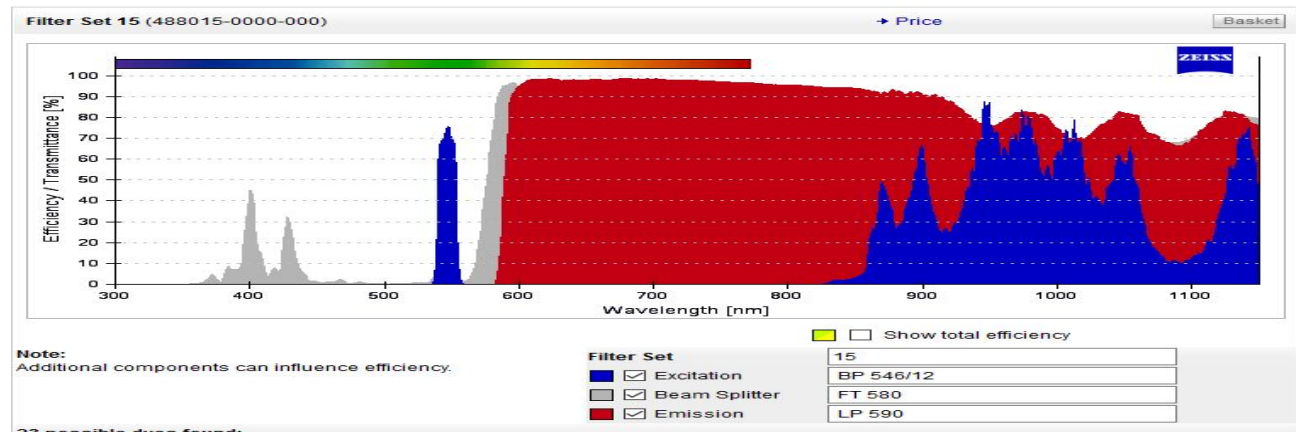
49000 - ET - DAPI



Position III: FITC - AF488/FITC/EGFP plus chlorophyll auto-fluorescence - Zeiss Filter Set 9 (488009)
Excitation: 450-490; dichroic mirror: 510; Emission filter: LP515



Position IV: Rhodamine - Zeiss Filter Set 15 (488015)
Excitation: 546/12; FT580; Emission filter: LP590



Previous specs:

Before May 4, 2017:

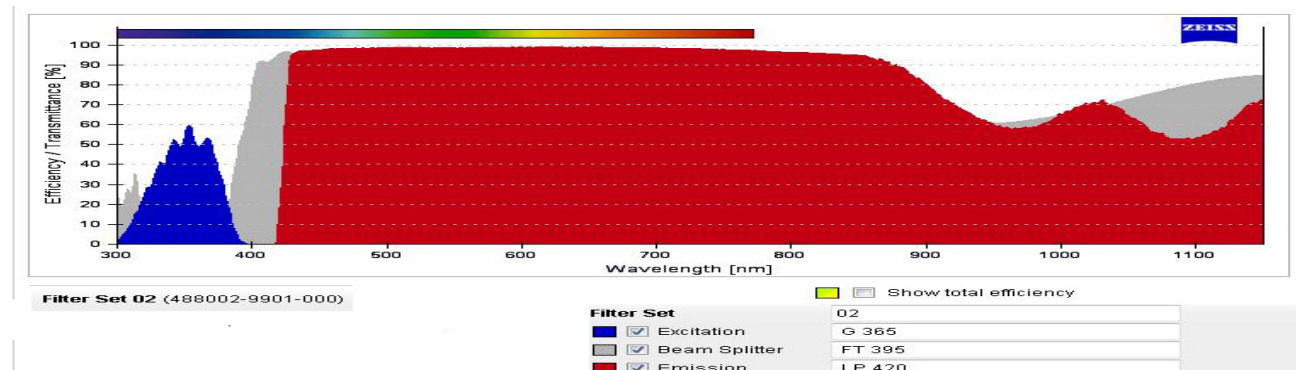
Camera: AxioCam HRc

Software: AxioVision 4

Before March 21, 2015:

Light Source: HBO-100W Fluorescent

Filter Position II: DAPI wide - Zeiss Filter Set 2 (487902) Excitation: 365; dichroic mirror: FT 395; Emission filter: LP420



Zeiss Axioskop

Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance	Condenser Turret	
						Bright Field	DIC
Plan-Neofluar (440310)	2.5x	0.075	AIR	1	9.3 mm	H/DIC	no
Plan-Neofluar Ph1 (440331)	10x	0.30	AIR	1	5.5 mm	H/DIC	DIC
Plan-Neofluar Ph2 (440341)	20x	0.50	AIR	1	2.0 mm	H/DIC	DIC
Plan-Neofluar Ph2 (440351)	40x	0.75	AIR	1	0.71 mm	H/DIC	DIC

Camera: AxioCam HRc

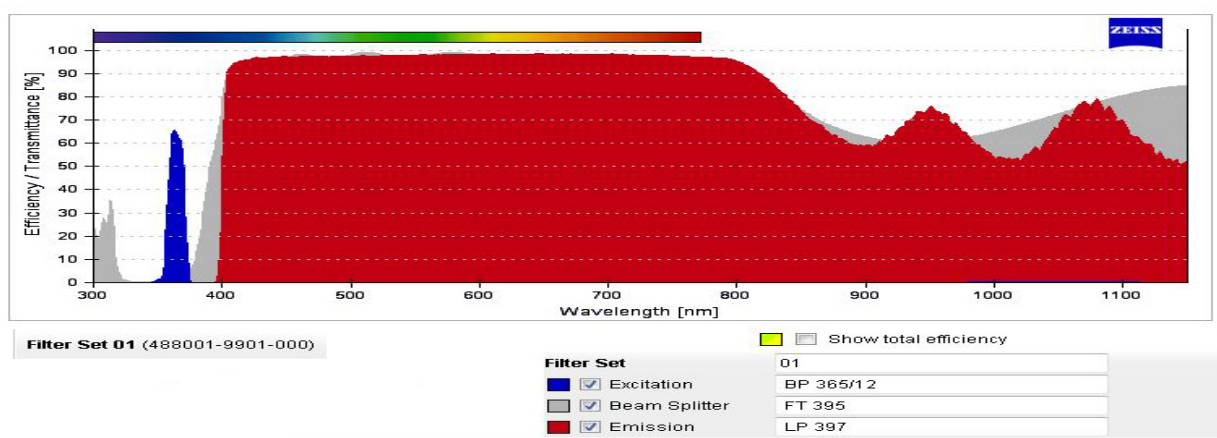
Software: Zen Blue with multichannel module

Fluorescent Light Source: Lumencor SOLA-365-SM light engine

Fluorescent Filters:

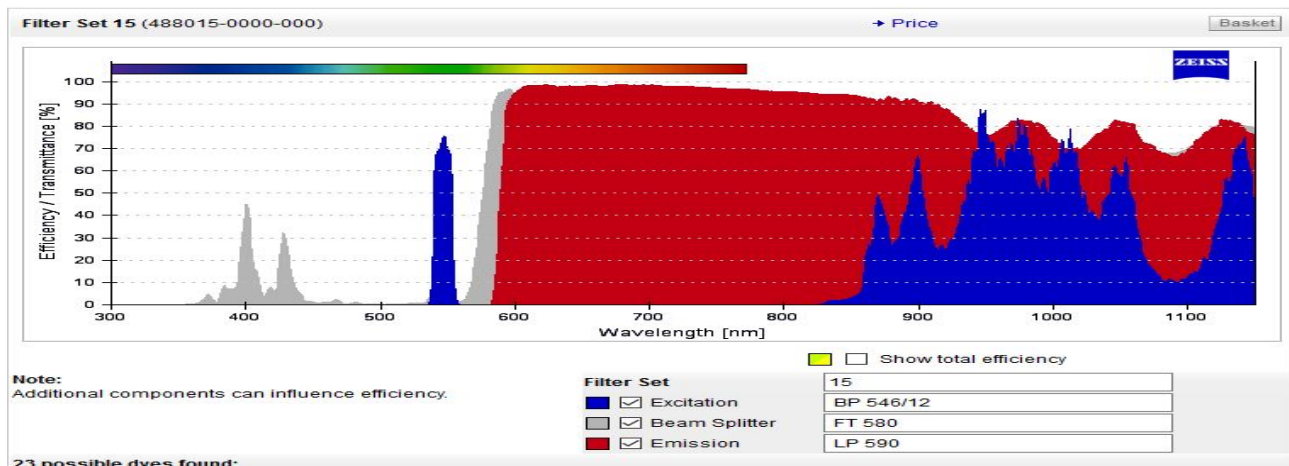
Position I: DAPI narrow - Zeiss Filter set 1 (48702)

Excitation: 365/12; dichroic mirror: FT 395; Emission filter: LP397



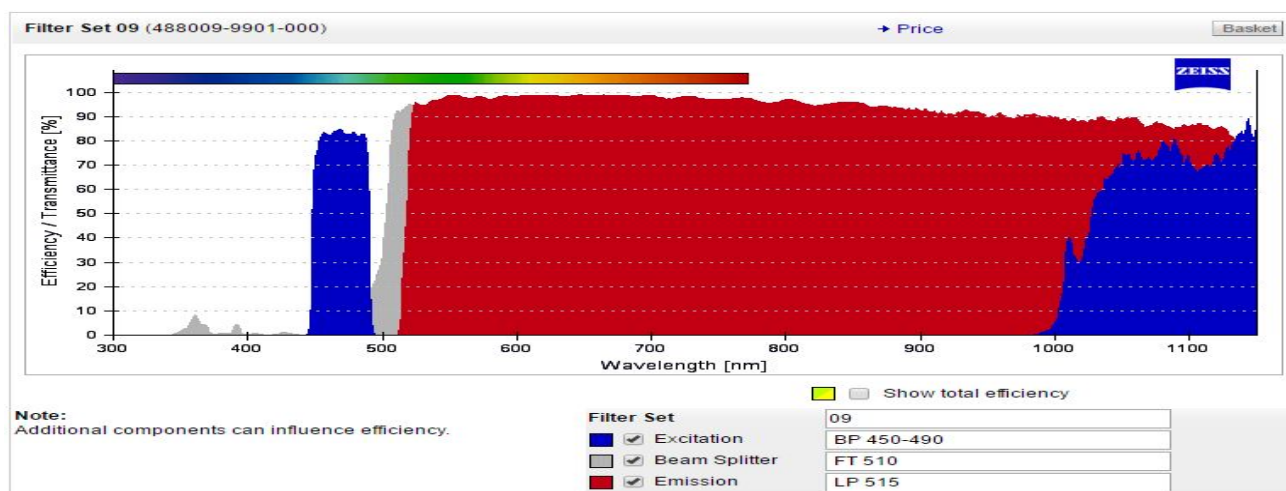
Position II: Rhodamine - Zeiss Filter Set 15 (488015)

Excitation: 546/12; FT580; Emission filter: LP590



Position III: AF488 - AF488/FITC/EGFP plus chlorophyll auto-fluorescence - Zeiss Filter Set 9 (488009)

Excitation: 450-490; dichroic mirror: 510; Emission filter: LP515



Previous specs:

Before March 22, 2018:

Camera: Axiocam MRc

Before May 4, 2017:

Camera: None

Software: None

Before March 21, 2015:

Light source: HBO-50W Fluorescent

Zeiss Microspectrophotometer

Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance mm	Condenser Turret	
						Bright Field	DIC
Plan-Neofluar (440330)	10x	0.30	AIR	1	5.5	H	-
Plan-Neofluar (440340)	20x	0.50	AIR	1	1.3	H	-
Plan-Neofluar Pol (440353)	40x	0.75	AIR	1	0.41	H	-
Plan-Neofluar Oil (440480)	100x	1.30	OIL	1.518	0.20	H	-
Plan-Neofluar Oil Iris (440486)	100x	1.30	OIL	1.518	0.2	H	-

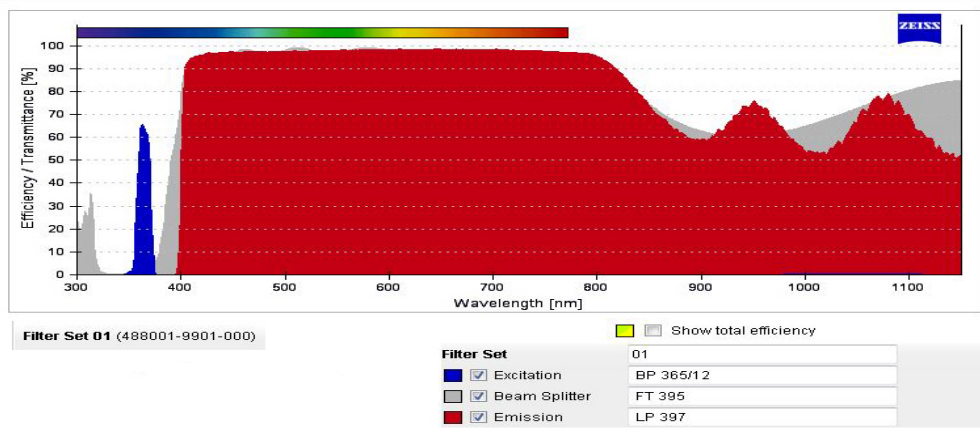
Microspectrophotometer: MSP 20

Fluorescent Light Source: HBO 100-W burner

Fluorescent Filters:

Position I: DAPI narrow - Zeiss Filter set (48702)

Excitation: G 365/12 nm dichroic mirror: FT 395; emission: LP397



Zeiss Discovery v12 Dissecting microscope

Objectives:

Objective Type (Model number)	Mag	Immersion Media	Working Distance
PlanApo S (435202-0000-000)	0.63x	AIR	81 mm
PlanApo S (435226-0000-000)	1.5x	AIR	30 mm
PlanApo S (435224-0000-000)	2.3x	AIR	10 mm

Camera: AxioCam 512 Color

Software: Zen Blue Pro with extended focus and time lapse modules

Light Source: KL2500 LCD (transmitted light) and KL1500 LCD (reflected ring light)

Previous specs:

Before May 4, 2017:

Camera: AxioCam HRc

Software: AxioVision 4 with extended focus and time lapse modules

Zeiss Stemi SV 11

Objectives:

Objective Type (Model number)	Mag	Immersion Media
Plan Apochromat S (455070-0000-000)	1.0x	AIR
Plan S (455071-0000-000)	1.6x	AIR

Camera: AxioCam HRc

Software: Zen Blue with time lapse module

Light Source: Zeiss (transmitted light) and CL6000 LED (reflected ring light)

Previous specs:

Before May 4, 2017:

Software: AxioVision 4

NightSea Fluorescence Adapters for dissecting scopes

Filter Set	Excitation	Emission	Fluorophores
Ultraviolet (UV) (wear protective glasses)	360-380nm	415nm LP	DAPI, Aniline Blue...
Green Only (RB-GO)	440-460nm	500-560nm BP	EGFP... <i>minus autofluorescence</i>
RB – Royal Blue	440-460nm	500nm LP	EGFP... <i>plus autofluorescence</i>
CY – Cyan	490-515nm	500nm LP	YFP, Venus... <i>plus autofluorescence</i>
GR – Green	510-540nm	600nm LP	DsRed, dTomato...

Zeiss Stemi 2000-C

Objectives:

Objective Type (Model number)	Mag	Immersion Media
Plan Achromat S (455070-0000-000)	1.0x	AIR
Plan S (455071-0000-000)	1.6x	AIR

Light Source: KL1500 LCD Cold

Zeiss Stemi 2000

Objectives:

Objective Type (Model number)	Mag	Immersion Media
Apo (000)		AIR

Light Source: CL6000 LED

Wild type S (West Lab)

Objectives:

Objective Type (Model number)	Mag	Immersion Media
Apo (000)		AIR

Light Source: KL1500 LCD Cold?

Zeiss Stemi 508 Doc (Growth Facilities)

Objectives:

Objective Type (Model number)	Mag	Immersion Media	Working Distance
Apo (435264-9060-000)	0.63x	AIR	127 mm
Glass	1.0x	AIR	92 mm

Camera: AxioCam 208 color

Software: Stand Alone On-Screen Display (OSD)

Light Source: KL 300 LED with ring illuminator

JEOL JSM-6010 LV Scanning Electron Microscope

Resolution: 4.0 nm in HV mode; 5.0 nm in LV mode

Magnification: 80X to 300kX

Accelerating Voltage: 500 V to 20 kV

Detectors:

1. Everhart Thornley
2. Backscatter with COMPO, TOPO, and Shadow
3. Low Vacuum Secondary Electron detector

Operating Pressure: 10⁻⁴ Pa order to 100Pa

Other: motorized 2 axis stage, chamberscope, stage navigation system