

# Microscope Specs

## Zeiss AxioImager A2

### 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	<b>AIR</b>	<b>1</b>	<b>9.5 mm</b>	H	no
EC Plan-Neofluar (420330-9901-000000)	5x	0.16	<b>AIR</b>	<b>1</b>	<b>18.5 mm</b>	H	no
Plan-Apochromat (420640-9900-000000)	10x	0.45	<b>AIR</b>	<b>1</b>	<b>2.0 mm</b>	H	II
Plan-Apochromat (420650-9901-000000)	20x	0.80	<b>AIR</b>	<b>1</b>	<b>0.55 mm</b>	H	II
Plan-Apochromat Korr (420660-9970-000)	40x	0.95	<b>AIR</b>	<b>1</b>	<b>0.25 mm</b>	H	III
Plan-Apochromat DIC Oil (420782-9900-000000)	63x	1.40	<b>OIL</b>	<b>1.518</b>	<b>0.19 mm</b>	H	III

**Camera:** AxioCam 512 Color

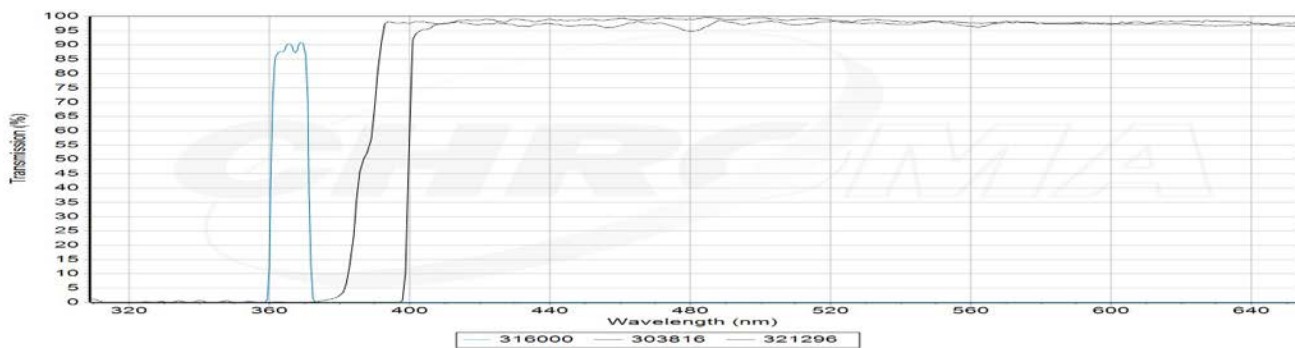
**Software:** Zen Blue Pro with Multichannel

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

### Filters:

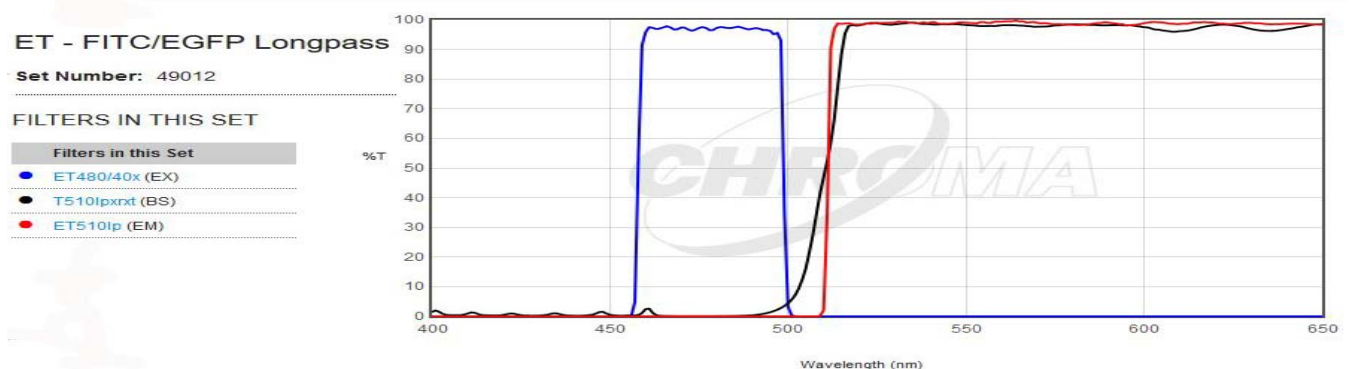
**Position 1:** DAPI narrow - Chroma Custom Set

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

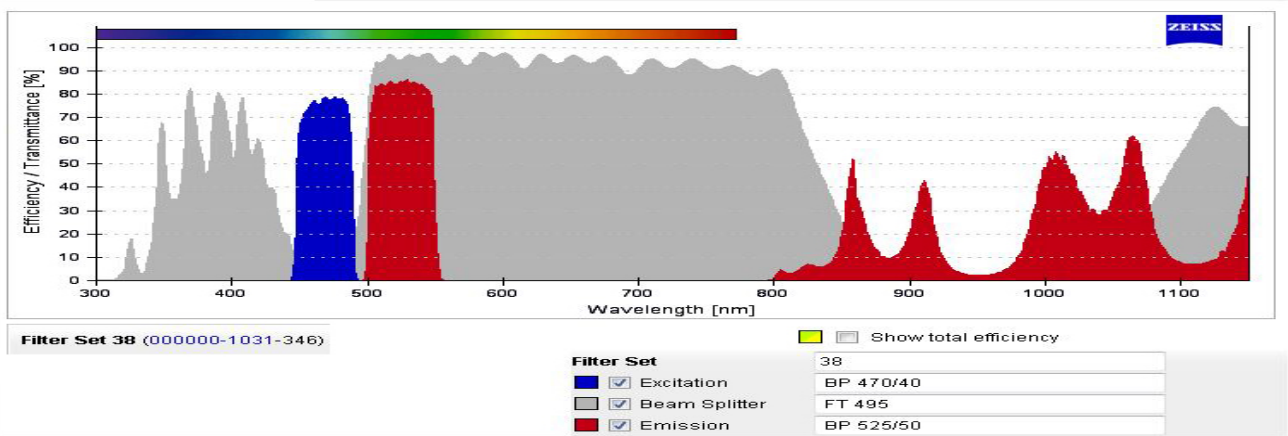


**Position 2:** FITC – AF488/FITC/EGFP plus chlorophyll auto-fluorescence - Chroma Filter set 49012

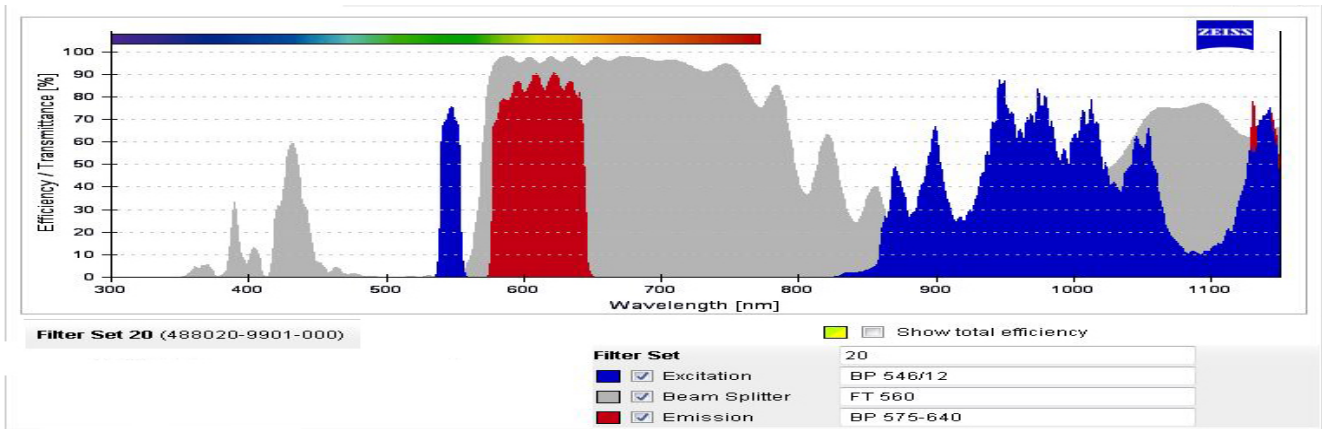
Excitation: BP 480/40; Beamsplitter: FT 510; Emission: 510 LP



**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 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 refractiv e 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

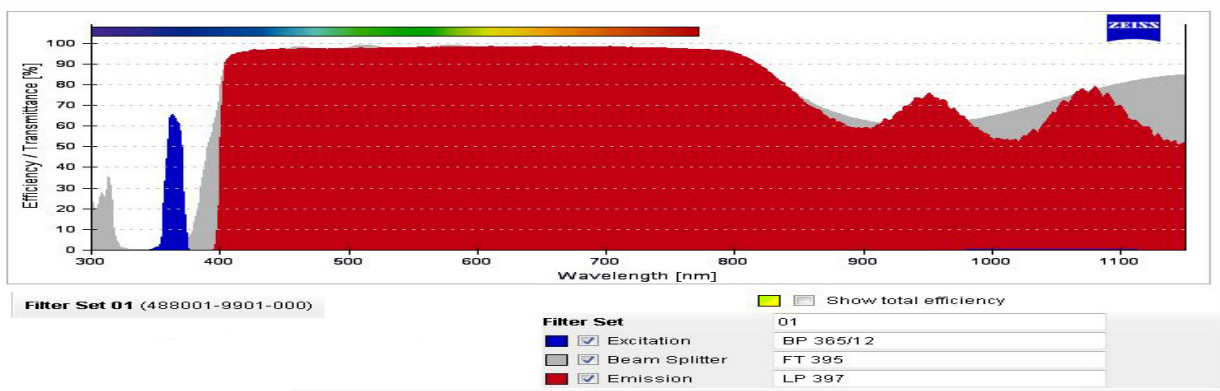
Software: Zen Blue with multichannel module

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

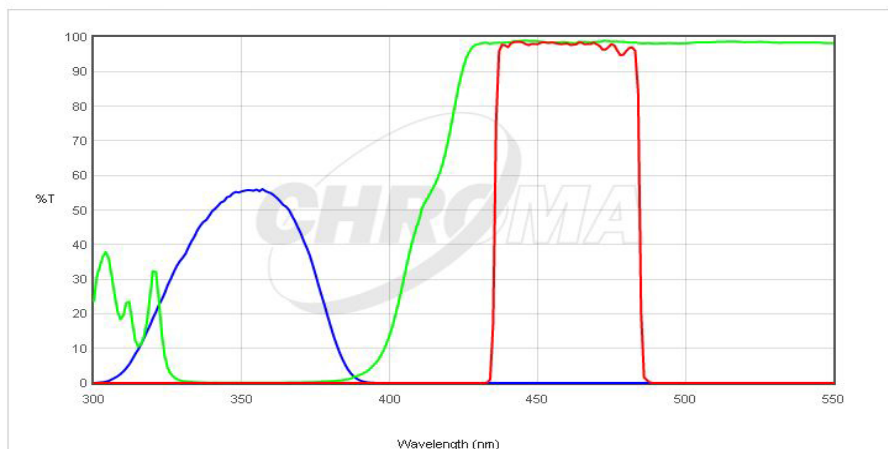
Legend

Catalog Sets

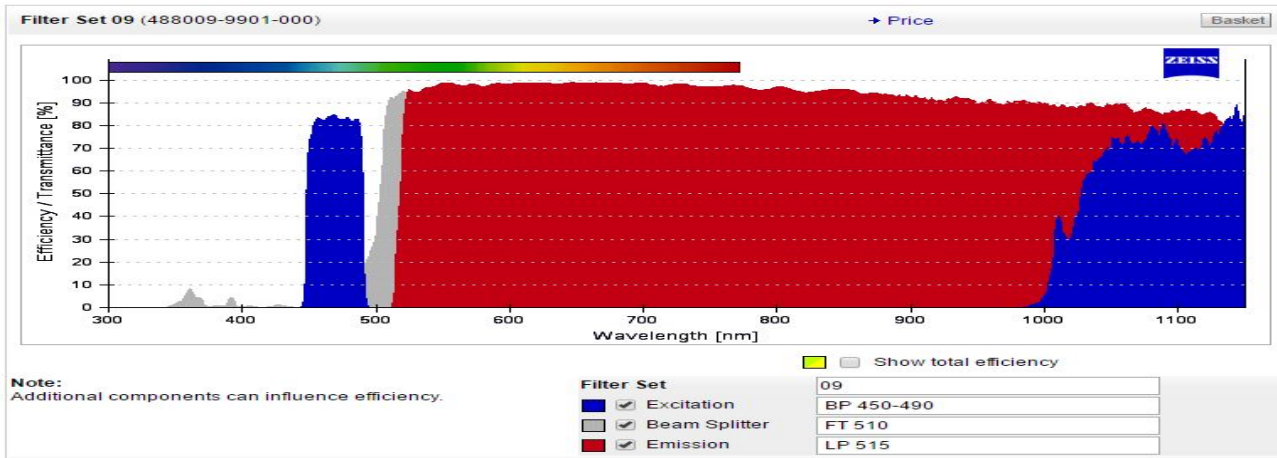
49000 [Hide Individual Filters x](#)

PLOT	FILTERS	TYPE	%T-OD	AOI DATA
<input checked="" type="checkbox"/>	AT350/50x	EX	48.30 T at 368nm	0° ASCII
<input checked="" type="checkbox"/>	T400lp	BS	0.15 T at 368nm	45° ASCII
<input checked="" type="checkbox"/>	ET460/50m	EM	0.00 T at 368nm	0° ASCII

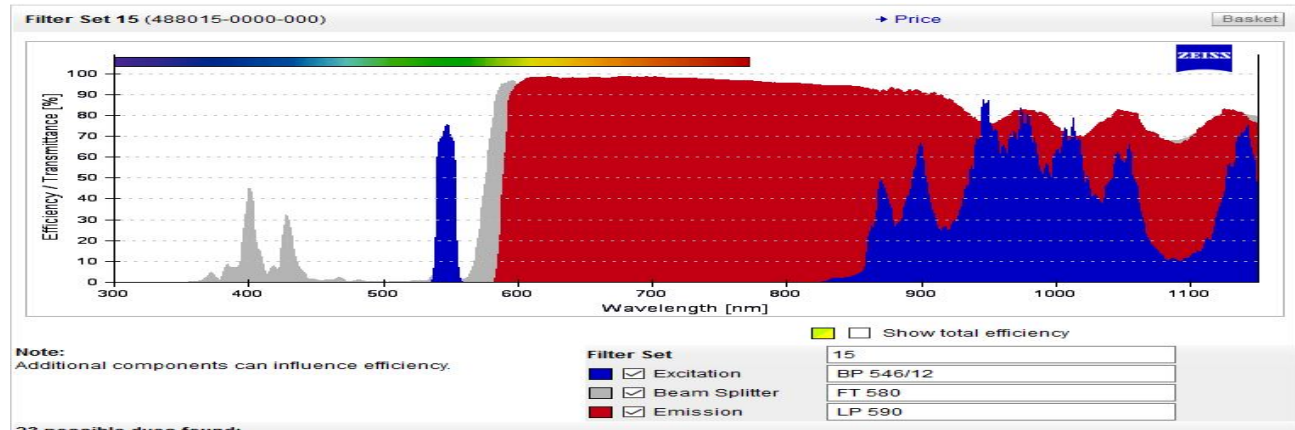
49000 - ET - DAPI



**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



23 possible dyes found:

**Previous specs:**

*Before May 4, 2017:*

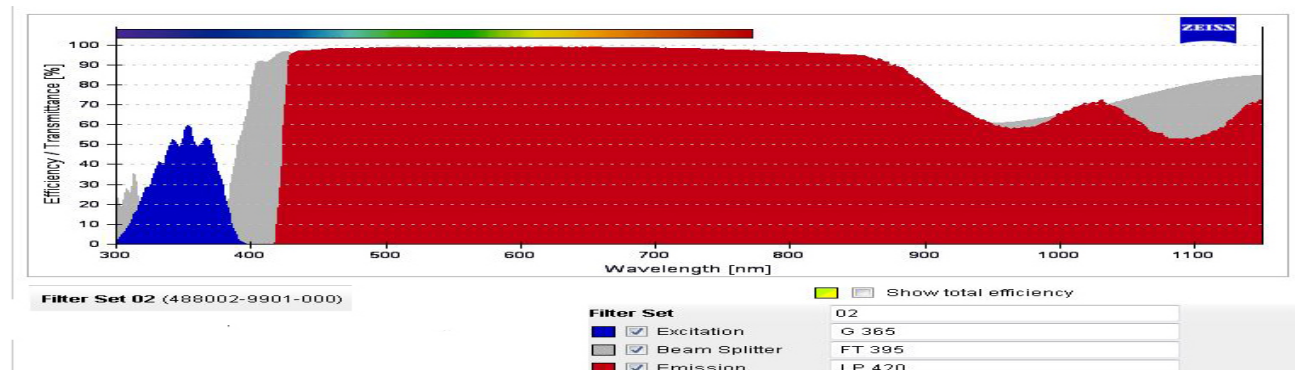
Camera: AxioCam HRc

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	<b>AIR</b>	<b>1</b>	<b>9.3 mm</b>	H/DIC	no
Plan-Neofluar Ph1 (440330)	10x	0.30	<b>AIR</b>	<b>1</b>	<b>5.5 mm</b>	H/DIC	DIC
Plan-Neofluar Ph2 (440341)	20x	0.50	<b>AIR</b>	<b>1</b>	<b>2.0 mm</b>	H/DIC	DIC
Plan-Neofluar Ph2 (440351)	40x	0.75	<b>AIR</b>	<b>1</b>	<b>0.71 mm</b>	H/DIC	DIC

**Camera:** AxioCam HRc

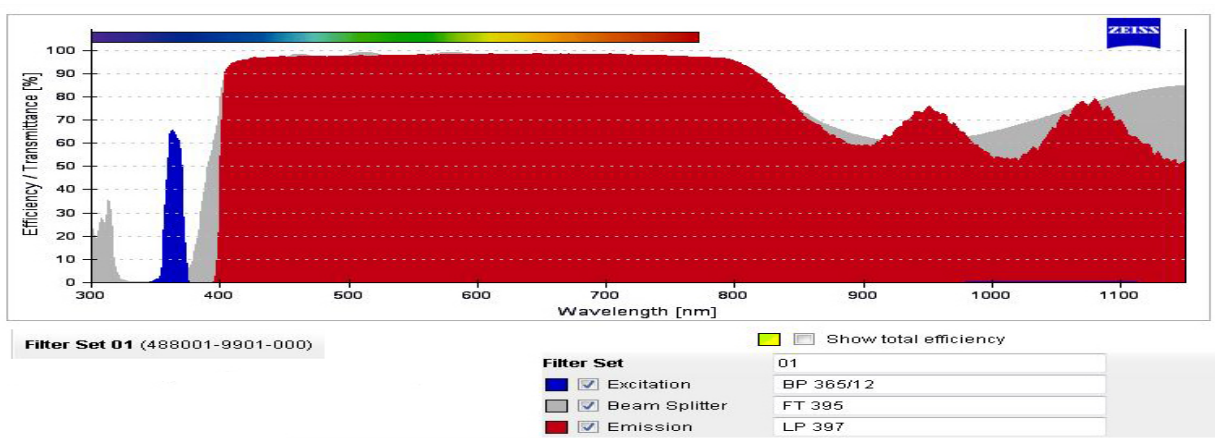
**Software:** Zen Blue with multichannel module

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

## Fluorescent Filters:

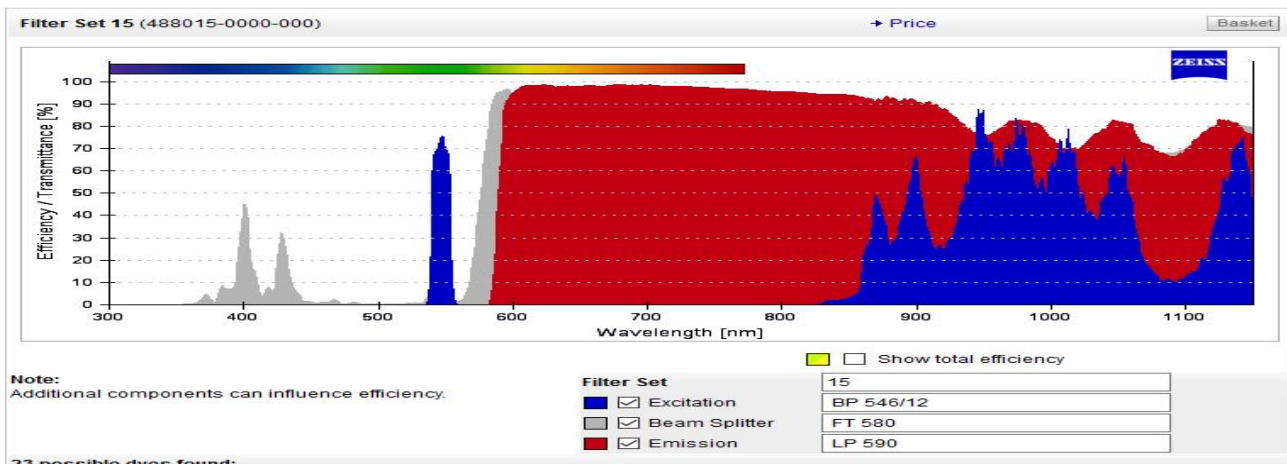
**Position I:** DAPI narrow - Zeiss Filter set 1 (48702)

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



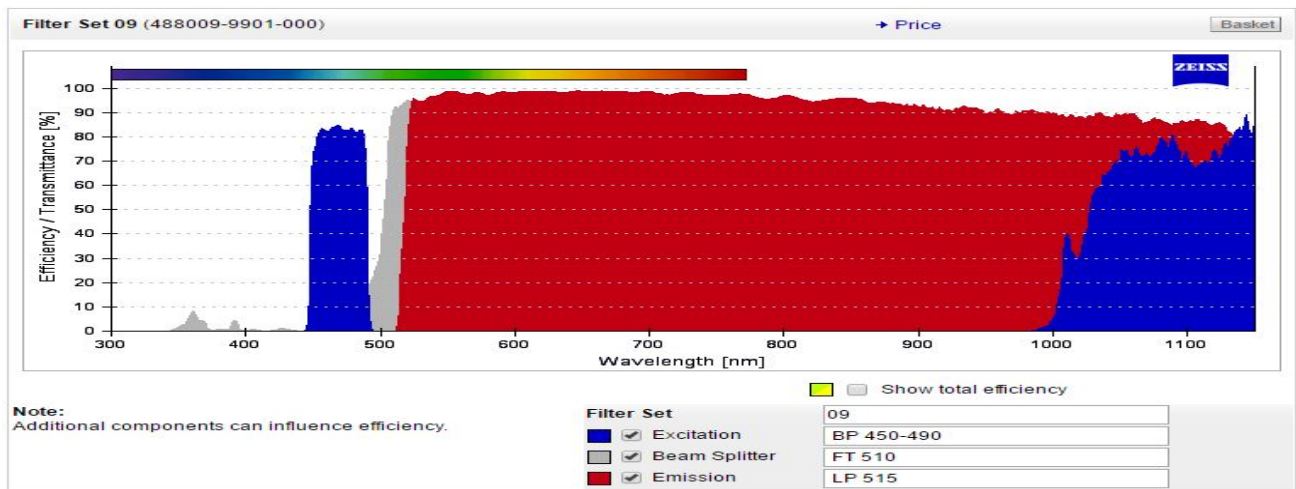
**Position II:** Rhodamine - Zeiss Filter Set 15 (488015)

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 LSM 700 confocal

### Objectives:

Objective Type (Model number)	Mag	NA Numerical aperture	Immersion Media	n refractive index	Working Distance	Condenser Turret	
						Bright Field	DIC
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
W N-Achroplan (420957-9900)	20x	0.5	WATER	1.33	2.6 mm	BF	-
Plan-Apochromat Korr (420660-9970-000)	40x	0.95	AIR	1	0.16 mm	BF	DIC III
Plan-Apochromat Oil (420762-9800-000)	40x	1.3	OIL	1.518	0.22 mm	BF	DIC III
LD C-Apochromat UV VIS IR (421867-9970)	40x	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
Alpha Plan-Apochromat DIC Oil (420792-9800-000)	100x	1.46	OIL	1.518	0.10 mm	BF	DIC III

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. The 40x LD C-Apochromat uses **WATER instead of OIL** (*do not* immerse or dip objective in water). 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

**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 (Brightfield/DIC/fluorescence):**

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

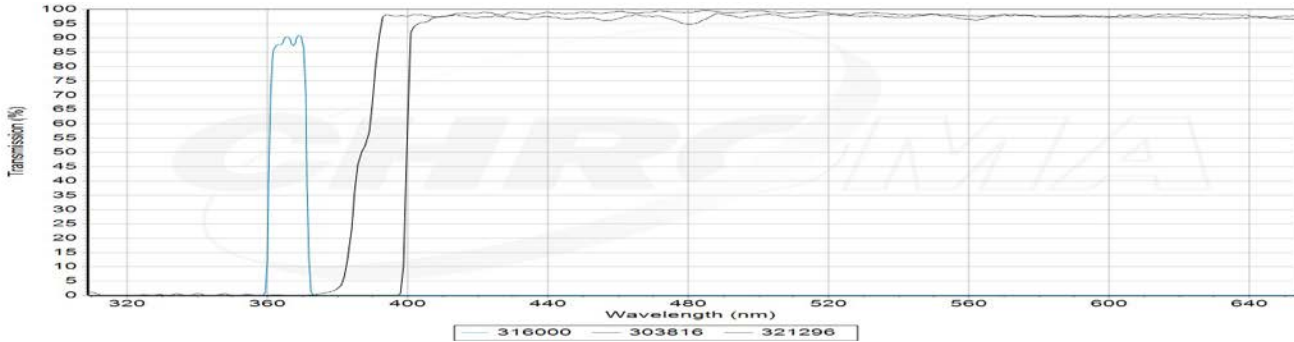
**Camera:** AxioCam 512 Color

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

**Filters:**

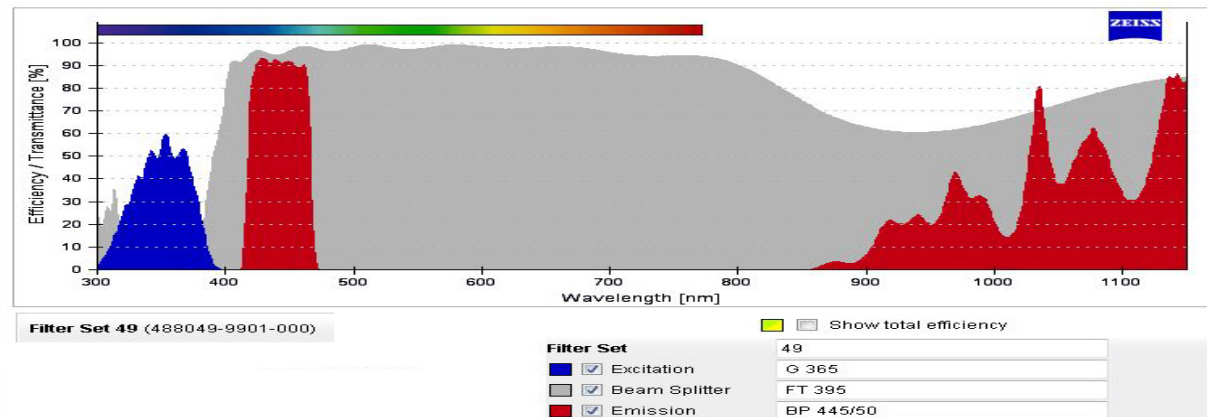
**Position 1:** DAPI narrow - Chroma Custom Set

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



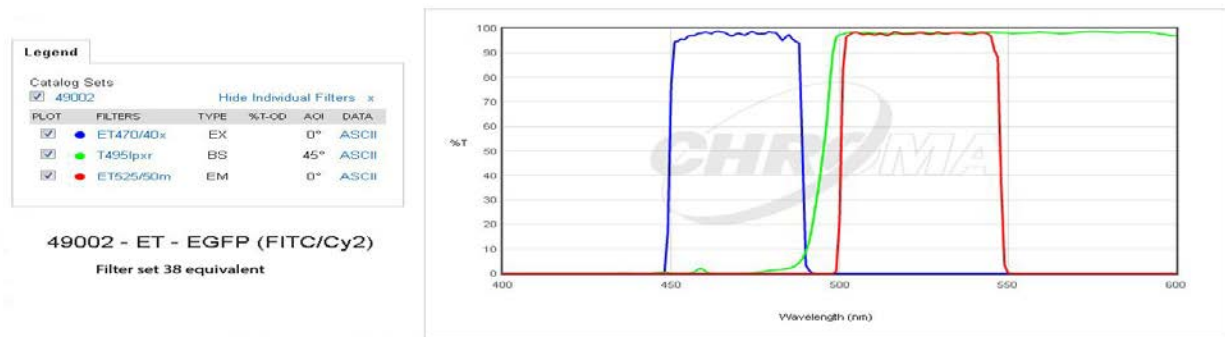
Position 2: DAPI wide - Zeiss Filter set 49 (488049-0000)

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



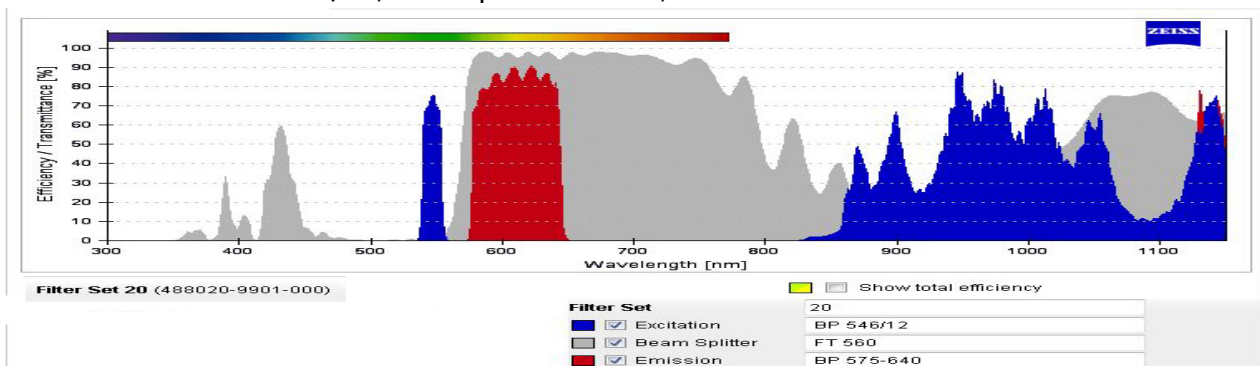
Position 3: GFP - AF488/FITC/EGFP minus chlorophyll auto-fluorescence - Chroma filter set 49002

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 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

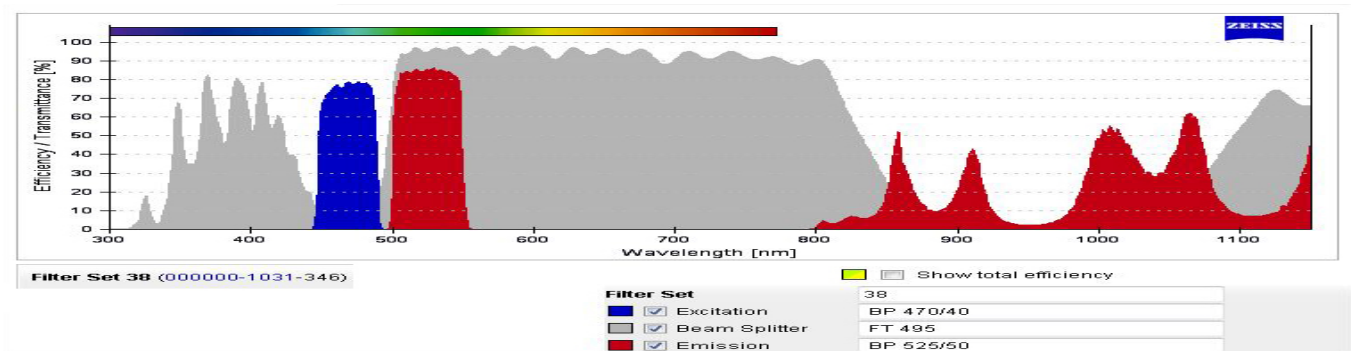
**Before March 21, 2015:**

*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 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	DIC .3-.4
Plan-Neofluar (440340)	20x	0.50	AIR	1	1.3	H	DIC .5-1.4
Plan-Neofluar Pol (44)	40x	0.75	AIR	1	0.41	H	DIC .5-1.4
Plan-Neofluar Oil (440480)	100x	1.30	OIL	1.518	0.20	H	DIC .5-1.4
Plan-Neofluar Oil Iris (440486)	100x	1.30	OIL	1.518	0.2	H	

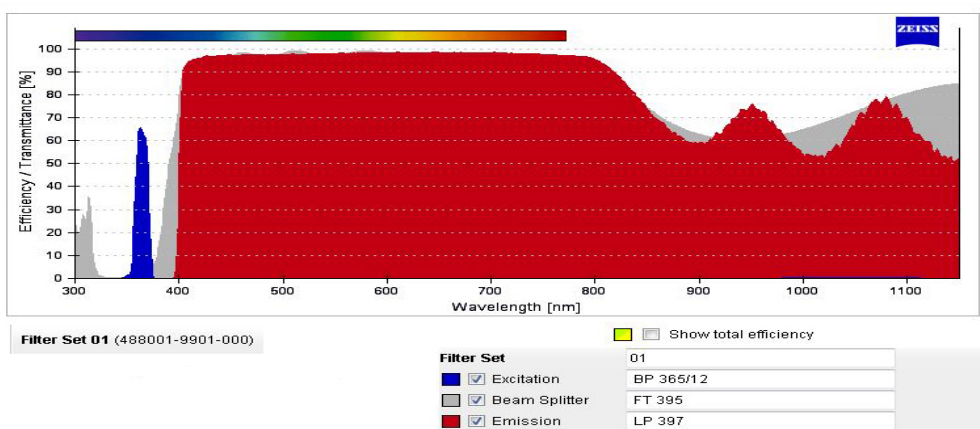
**Microspectrophotometer:** MSP 20

**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	<b>AIR</b>	<b>81 mm</b>
PlanApo S (435226-0000-000)	1.5x	<b>AIR</b>	<b>30 mm</b>
PlanApo S (435224-0000-000)	2.3x	<b>AIR</b>	<b>10 mm</b>

**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 Achromat S (455070-0000-000)	1.0x	<b>AIR</b>
Plan S (455071-0000-000)	1.6x	<b>AIR</b>

**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	<b>AIR</b>
Plan S (455071-0000-000)	1.6x	<b>AIR</b>

*Light Source:* KL1500 LCD Cold

## Zeiss Stemi 2000

### Objectives:

Objective Type (Model number)	Mag	Immersion Media
Apo (000)		<b>AIR</b>

*Light Source:* CL6000 LED

## Wild type S (West Lab)

### Objectives:

Objective Type (Model number)	Mag	Immersion Media
Apo (000)		<b>AIR</b>

*Light Source:* KL1500 LCD Cold?

## Zeiss Stemi 508 Doc (Growth Facilities)

### Objectives:

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

*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<sup>-4</sup> Pa order to 100Pa

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