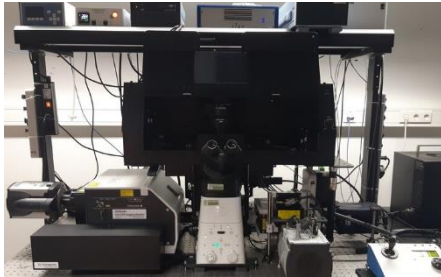


LIVE Spinning Disk/ Nanodissection Unit



Installed August 2022, equipped with second spinning disk August 2023. Inverse spinning disk microscope for fast imaging, preferably for long-term live applications. Equipped with laser lines for blue, green, orange and red dyes. All lasers available for photomanipulation (FRAP, photoactivation etc.). Pulsed 355 nm laser for nanodissection. Hard- and software autofocus, multi-positioning and full environmental control (temperature/CO₂). Selectable cameras: EM-CCD for sensitive,

low-photon budget imaging, or a sCMOS camera for fast imaging at high resolution. *X1 for thinner/dim samples & a smaller field of view and W1 for thicker/bright samples & a larger field of view.*

(Last update Oct. 2023)

Stand

Nikon T12-E, inverse, motorized, double-deck, with hardware autofocus (Nikon Perfect Focus System), DIC optics for 60x (non-motorized), Visitron ViRTE_x-210 real time controller

Objectives

- CFI Plan Apo λ 20x/0.75, working distance (WD) 1.00 mm
- CFI Plan Apo λ S 40xC/1.25 Sil, WD 0.30 mm (with coverslip thickness correction collar)
- CFI Plan Apo λ 60x/1.42 Oil, WD 0.15 mm
- CFI Plan Apo VC 60xC/1.20 W, WD 0.28-0.31 mm (with coverslip thickness correction collar, UV-transmissive for use with 355 nm)
- CFI Plan Apo λ 100x/1.45 Oil, WD 0.13 mm
- CFI Plan Fluor 100x/1.30 Oil Iris, WD 0.16 mm

On request:

- CFI Plan Apo λ 40x/0.95, WD 0.25-0.16 mm (with coverslip thickness correction collar)
- Nikon CFI Plan Apo Lambda D 4X (MRD70040) (for Scan Slide Module, which generates a comprehensive view of your specimen)

Lasers and photomanipulation

Visitron VS-LMS laser combiner (single port), Gataca iLAS pulse FRAP scanner, 3-channel external port switcher for imaging or photomanipulation, respectively

- 405 nm laser diode (140 mW)
- 488 nm laser diode (150 mW)
- 561 nm solid state laser (200 mW), AOTF-controlled (VS-AOM100)
- 640 nm laser diode (200 mW)
- 355 nm passively Q-switched pulsed laser (16 mW average power, 0.8 μ J/pulse, repetition rate 21kHz, pulse width 400 ps)

Widefield illumination

- White LED
- Lumencor Spectra III (hybrid solid state LED) with 8 excitation bands

LIVE Spinning Disk/ Nanodissection Unit



a. Spinning Disk Unit X1

- Yokogawa CSU-X1-A1 Nipkow spinning disk (50 μm pinholes, spacing 253 μm , 5000 rpm)
- Main dichroic (D1): Semrock Di01-T405/488/568/647

Filters

Pos.	Spectra III	Reflector Turret	Emission Filter Wheel 1 EM-CCD	Emission Filter Wheel 2 sCMOS
1	DAPI 375/30	FRAP Polychroic ^a	DAPI 455/50	DAPI 455/50
2	CFP 440/20	Triple LED-DA/FI/TX-A ^b	GFP 525/36	GFP 525/36
3	GFP 475/28	DIC Analyzer	mCherry 605/70	mCherry 605/70
4	YFP 510/25		mCherry LP570	Quad (Chroma) ^c
5	Cy3 555/28		Cy5 705/72	empty
6	RFP 575/25		DIC Analyzer	DIC Analyzer
7	Cy5 637/12		CFP 470/24	
8	IR 748/12		YFP 535/30	
9			empty	
10			Quad (Semrock) ^d	

^aChroma ZT405/488/561/640rpc 60%T 40%R

^bSemrock FF01-378/474/575-25, FF409/493/596-Di02, FF01-432/523/702

^cChroma ZET405/488/561/640m-TRF

^dSemrock FF01-440/521/607/700

Cameras

- EM-CCD: back-illuminated Andor iXon Life 888, 1024 x 1024 pixel, 13 μm pixel size, 16 bit, 26 fps (full frame), QE >95%
- sCMOS: back-illuminated Teledyne Prime BSI, 2048 x 2048 pixel, 6.5 μm pixel size, 16 bit, 43 fps (full frame), QE >95%

b. Spinning Disk Unit W1

- Yokogawa CSU-W1-T2 spinning disk (50 μm pinholes, spacing 500 μm , 4000 rpm)
- Main dichroic (D1): Semrock Di01-T405/488/568/647

Beam Homogenizer

VS-HOM1000 Homogenizer → homogenizes the Gaussian-shaped laser beam to obtain even illumination (= the same illumination intensity in the center and the edge regions of the field of view; never 100% homogen even with homogenizer!)

LIVE Spinning Disk/ Nanodissection Unit



Filters

Pos.	Spectra III	Reflector Turret	Emission Filter Wheel 1 EM-CCD	Emission Filter Wheel 2 sCMOS
1	DAPI 375/30	FRAP Polychroic ^a	DAPI 455/50	DAPI 455/50
2	CFP 440/20	Triple LED-DA/Fl/TX-A ^b	GFP 525/36	GFP 525/36
3	GFP 475/28	DIC Analyzer	mCherry 605/70	mCherry 605/70
4	YFP 510/25		Quad (Semrock) ^d	Quad (Semrock) ^c
5	Cy3 555/28		DIC Analyzer	DIC Analyzer
6	RFP 575/25		empty	
7	Cy5 637/12		DAPI 432/36	
8	IR 748/12		GFP 515/30	
9			mCherry 595/31	
10			Cy5 698/70	

^aChroma ZT405/488/561/640rpc 60%T 40%R

^bSemrock FF01-378/474/575-25, FF409/493/596-Di02, FF01-432/523/702

^cSemrock FF01-440/521/607/700

^dSemrock FF01-440/521/607/700

Cameras

- EM-CCD: back-illuminated Andor iXon Life 888, 1024 x 1024 pixel, 13 μm pixel size, 16 bit, 26 fps (full frame), QE >95%
 - 1x tube lens option: total magnification is the magnification of the used objective
 - 2x tube lens option: increases the magnification of the used objective by a factor of 2
- sCMOS: back-illuminated Teledyne Prime BSI, 2048 x 2048 pixel, 6.5 μm pixel size, 16 bit, 43 fps (full frame), QE >95%

Widefield illumination

- Lumencor Spectra III (hybrid solid state LED) with 8 excitation bands
- Can be used without the Spinning disk to record widefield images

Stage/Inserts

- ASI PZ-2150 scanning stage (xy travel range 120 x 110 mm), Z-Piezo top plate (closed-loop, travel range 150 μm , 2.2 nm resolution)
- Inserts for all kind of slides, multi-well plates and 35 mm dishes

Software

- VisiView 6.0 (Visitron Systems) running on Windows 10 (64 bit)

Environmental Control

Tokai Hit Thermo Box (TI2TB), Pecon 2000-2 CO₂ controller with humidifier bottle