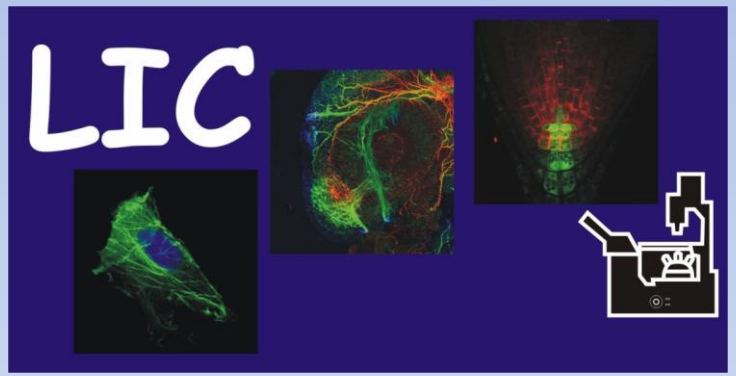
Welcome to the Life Imaging Center (LIC)



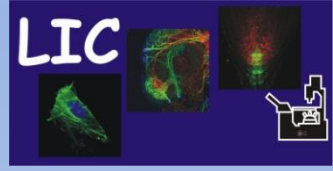
in the

Centre for Biological Systems Analysis (ZBSA)

Albert-Ludwigs-University Freiburg

START LIC TOUR

LIC infrastructure



Interactive Map

Wide-field Microscopes

Confocal Microscopes

Special Microscopes

Stereo Fluorescence Microscopes

Available Fluorescence Excitation Wavelengths

Computerlab and Software

Lab Space

Special Setups

LIC Booking Calender

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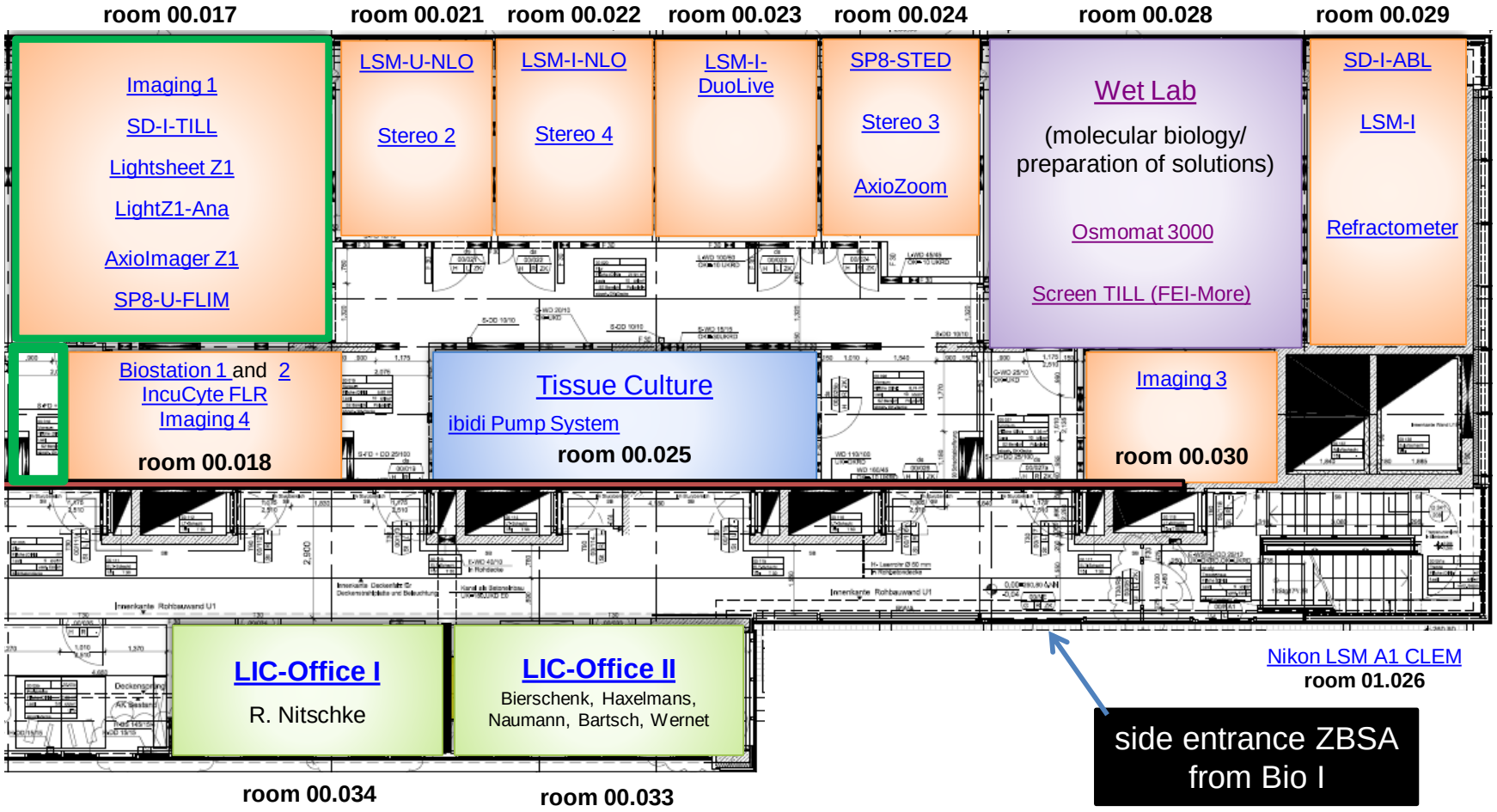
Infrastructure overview

Interactive Map of LIC (microscopes, lab and offices)



The LIC in the ZBSA is app. 330 m² in 14 rooms.

Green room is biosafety level S1.

All other rooms: biosafety level S2.

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Infrastructure overview

Fluorescence excitation wavelengths available

Available excitation wavelengths for confocal image recording

Microscope name	Room Location	Laser wavelength (nm)								
		405	458	488	514	543	561	633/635	WL	2-P
LSM-I-DuoLive	00.023	✓	✓	✓ *+ 489*	✓	*532*	✓	✓		
LSM-I	00.029		✓	✓	✓	✓		✓		
LSM-I-NLO	00.022	✓	✓	✓	✓		✓	✓		*680–1300 + 1040*
LSM A1 CLEM	01.026	✓	✓	✓	✓		✓	✓		
LSM-U-NLO	00.021		✓	✓	✓		✓	✓		*690–1020*
SD-I-ABL	00.029	*abl. + act.* 355/405/473		✓			✓			
SD-I-TILL	00.017	✓	445	✓	515		✓	642		
SP8 STED	00.024	✓	✓ + 476	✓ + 496	✓				*470 - 670*	
SP8-U-FLIM	00.017	✓	✓	✓	✓				*470 - 670*	
Lightsheet Zeiss Z1	00.017	✓	445	✓	✓		✓	638		

Available filters for excitation in wide-field microscopes

→ have a look directly at the different wide-field microscopes

Infrastructure overview

Microscopes for image recording

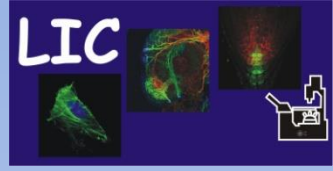
Inverted wide-field time-lapse / ratio imaging microscopes

Imaging 1	*Zeiss* Cell Observer, inverted microscope
Imaging 3	*Zeiss* Cell Observer, inverted microscope
Imaging 4	*Zeiss* Cell Observer, inverted microscope with TIRF

Upright wide-field time-lapse / ratio imaging microscopes

AxioImager Z1	*Zeiss* AxioImager Z1, upright microscope

Infrastructure overview

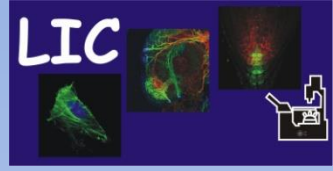


Microscopes for image recording

Confocal microscopes (time-lapse, spectral, multi-location rec.)

LSM-I	*Zeiss* LSM 510 META (inverted)
LSM-I-NLO	*Zeiss* LSM 880 (inverted), with AiryscanFast
LSM-U-NLO	*Zeiss* LSM 880 NLO (upright), with AiryscanFast
LSM-I-DUO-Live	*Zeiss* LSM 5 DUO Live (inverted)
Leica SP8 STED	*Leica* TCS SP8 gated 3D-STED (inverted)
Leica SP8-U-FLIM	*Leica* TCS SP8 Falcon FLIM (upright)
A1-CLEM	*Nikon* LSM A1 CLEM (inverted)
SD-I-ABL	*Zeiss* Spinning disk with laser ablation (inverted)
SD-I-TILL	*TILL* Spinning disk, TIRF, photomanipulation (inverted)

Infrastructure overview



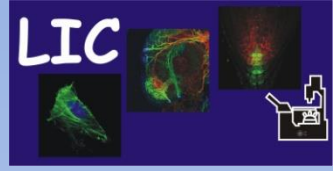
Microscopes for image recording

Special microscopes

Biostation I	*Nikon* Biostation IM
Biostation II	*Nikon* Biostation IM with perfusion chamber
InCuCyte FLR	*Essen Instrument* microscope inside incubator for long time-lapse up to 14 days
Lightsheet Z1	*Zeiss* Z.1 Lightsheet + Analysis PC (LightZ1-Ana)
Screen-TILL	*TILL* FEI-More screening microscope

Stereo fluorescence microscopes

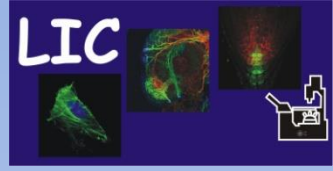
AxioZoom	*Zeiss* AxioZoom V16 with B/W and color camera
Stereo 2	*Leica* MZ FL III with B/W camera
Stereo 3	*Leica* MZ FL III with color camera
Stereo 4	*Leica* M165 FC with B/W camera



Infrastructure overview

Special Setups

Osmomat 3000	*Gonotec* Freezing Point Osmometer
ibidi Pump System	*ibidi* Pump with PumpControl Software, Perfusion Set
Refractometer	*A.KRÜSS Optronic* Refractometer



Infrastructure overview

Computerlab for data analysis

12 high-end PC Workstations for analysis and visualization

Software Imaris, Metamorph, Volocity, ZEN, Videomach, …

Servers for data storage and deconvolution

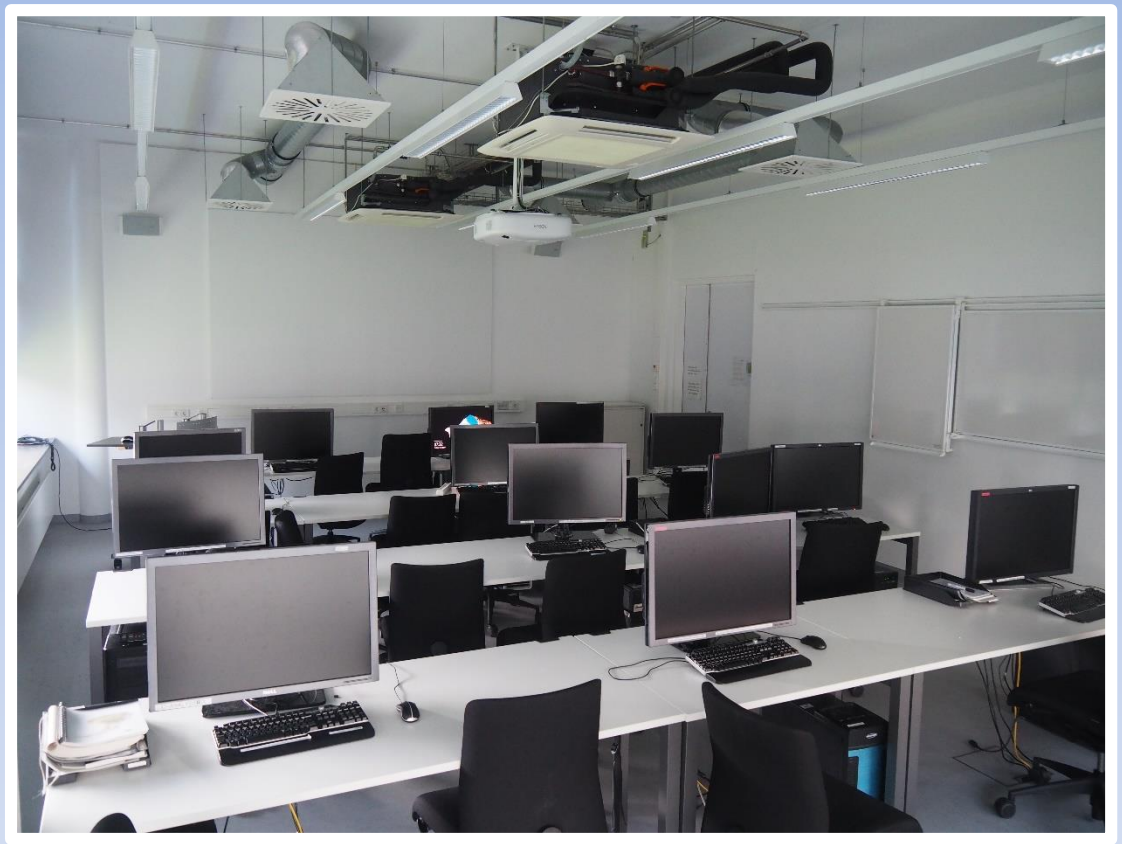
Huygens Core Server for deconvolution

(256 GB RAM, 24 GB GPU, 16 Processors)

SAN server storage capacity currently app. 60 TB

Computerlab

12 high-end PC Workstations for analysis and visualization



PCs equipped for offline analysis

- Server-based workstations
- Dual or quad processors
- 16–128 GB RAM
- NVidia GeForce and Titan graphics cards
- storage capacity of > 2 TB per system
- 30 inch monitors (2560 x 1600)

Computerlab

Software programs in the LIC Computerlab (room 00.041)

Computer name	Analysis 001	Analysis 002	Analysis 003	Analysis 004	Analysis 006	Analysis 007	Analysis 008	Analysis 009	Quadlic	Analysis 010	Analysis 011	Analysis 012	Light-Sheet-Ana
Software													
Amira	-	-	-	-	-	-	-	6.4.0	-	-	-	-	-
Arivis Vision4D	-	-	-	-	-	-	-	3.0.1 (2018, October 5)	-	-	-	-	3.0.1 (2018, October 5)
Biostation	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	2.10 build_131	-
Grapher	-	-	-	-	-	-	-	-	9.1.536	-	-	-	-
Huygens Prof. [2]	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4
Fiji ImageJ	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n	1.52n
Imaris [3]	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
IrfanView	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51
LAS (X) for SP8	-	-	-	3.5.19976.5	-	3.2.1	-	3.5.19976.5	-	-	-	-	-
Matlab	runtime	runtime	runtime	runtime	runtime	runtime	runtime	runtime	runtime	runtime	runtime	runtime	runtime
MetaMorph/MetaFluor	-	-	-	7.10.1.161 7862	-	-	7.10.1.161 6383	7.10.1.161 6384	7.10.1.161 7940	-	-	-	-
MS Office	2016	2016	2016	2016	2016	2016	2016	2016	2016	2016	2016	2016	2016
Nikon (NIS)	NIS Viewer 4.20	NIS Viewer 4.20	NIS Viewer 4.20	4.11.01 full 68F9D24B	NIS Viewer 4.20	NIS Viewer 4.20	NIS Viewer 4.20	NIS Viewer 4.20	4.11.01 full 1D7550D4	NIS Viewer 4.20	NIS Viewer 4.20	NIS Viewer 4.20	-
Origin Pro	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	2018 (9.5)	-
Photoshop	CS5	-	CS5	CS5	CS4	-	-	-	-	-	CS4	CS4	-
Illustrator	CS5	-	CS5	CS5	-	-	-	-	-	CS5	CS5	CS5	-
Snagit	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1	2018.1.1
Videomach	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	5.15.1	-
Volocity [4]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	-
ZEN blue	ZEN 2.6 2126929752	ZEN 2.6 1269682870	ZEN 2.6 1438131128	ZEN 2.6 1002268119	ZEN 2.6 1982722681	ZEN 2.6 1006627233	ZEN 2.6 1599433020	ZEN 2.6 90373740	ZEN 2.6 1447306778	ZEN 2.6 1981961964	-	ZEN 2.6 2017763274	Zen 2.6
ZEN black	ZEN 2.3 2126929752	ZEN 2.3 1269682870	ZEN 2.3 1438131128	ZEN 2.3 308876109	ZEN 2.3 1982722681	ZEN 2.3 1006627233	ZEN 2.3 1599433020	ZEN 2.3 90373740	ZEN 2.3 1447306778	ZEN 2.3 1981961964	ZEN 2014 1199623760	ZEN 2.3 2017763274	Zen2014LS

= installed
= not installed
= floating, limited number of licenses
= not in room 00.041 and only for Lightsheet-data anaylsis

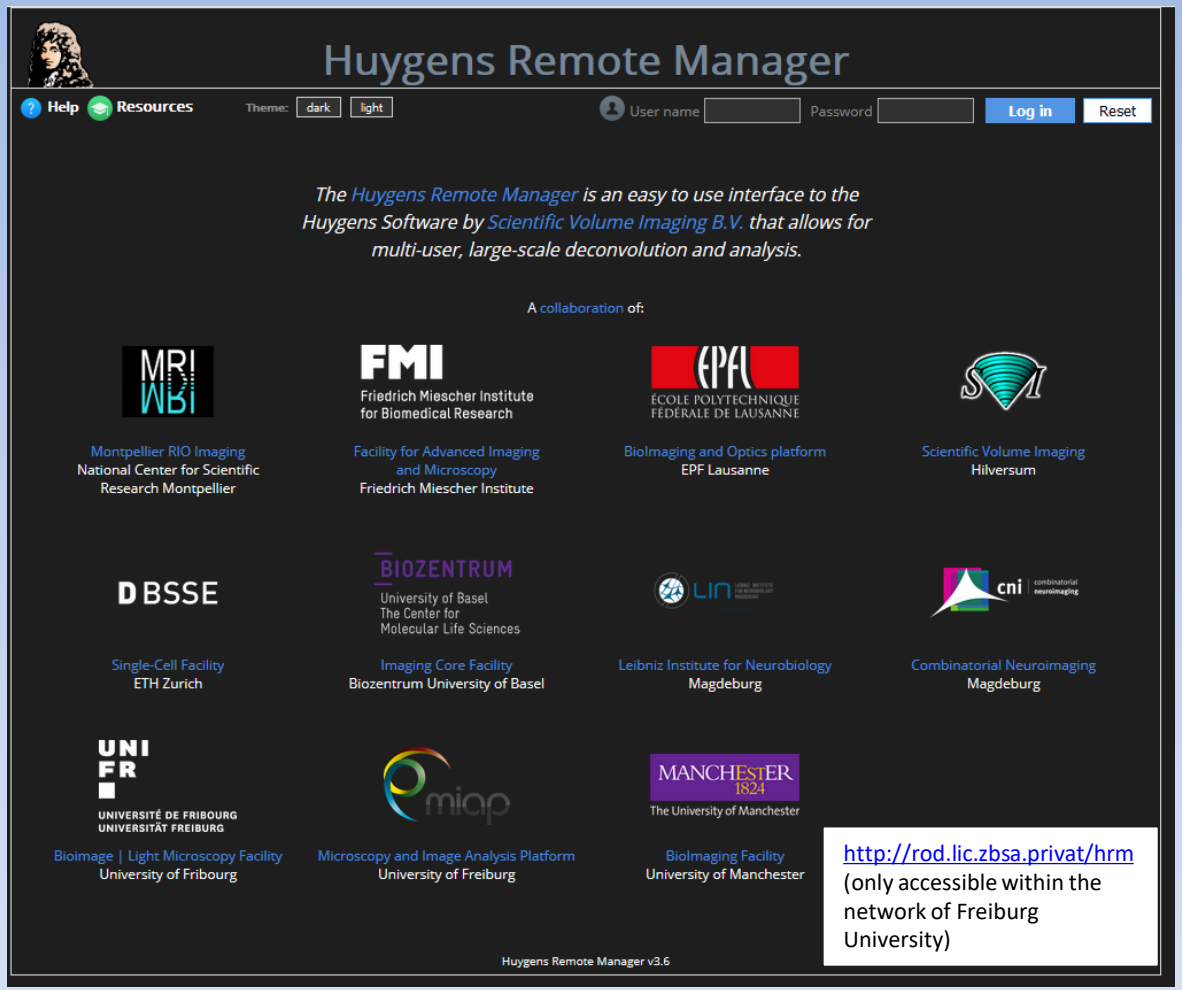
Please book computer for software usage.

[2] **Huygens:** The licenses are available at each workstation, please always close Huygens after finishing your application to release the licenses. Huygens Prof. floating license includes Object Stabilizer, Analyser, Stitching, Colocalization

[3] **Imaris:** Imaris is a floating license, a limited number of licenses especially moduls are available, only check what you have booked.
Coloc licenses only running on **LIC-Analysis 009**
Filament tracer licenses only running on **LIC-Analysis 007, 008 and 009**
book for usage

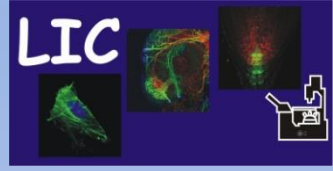
[4] **Volocity:** Volocity is a floating license, a maximum of 2 licenses are available (will be not updated - end of maintainance)

Huygens Core
Server for Deconvolution



http://rod.lic.zbsa.privat/hrm
(only accessible within the network of Freiburg University)

To Huygens Deconvolution Server



Wide-field microscopes

Imaging 1

Zeiss Cell Observer, inverted microscope

Live-cell fluorescence imaging setup with/for

- Live-imaging, fixed cells, tissues
- Colibri LED illumination (365, 400, 455, 470, 505, 590 nm; White-LED 540–580 nm, 625 nm)
- Motorized xy-table for multi location and tile-image recording
- 1st camera: Axiocam MRm Rev.3 (1.44MP, 1388 x 1040, cooled CCD camera)
- 2nd camera: Axiocam 105 color (5 MP, 2560 x 1920)
- CO_2 incubator
- Software ZEN Blue (ZEISS)

To Imaging 1 objectives and filters

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Imaging 1
Objectives and optical filters

Pos.	Objective	DIC	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number	DIC
1	A-Plan 10x/0,25 Ph1 441031	II	10	0.25	air	4.5	222 F	-
2	Plan-Apochromat 20x/0,8 M27 420650-9901	II	20	0.8	air	0.55	223 F	69 Ze
3	Plan-Neofluar 5x/0,15 440320		5	0.15	air	13.6	4Ni	-
4	LD LCI Plan-Apochromat 25x/0,8 DIC Imm Korr (UV) VIS-IR 440842-9870	II	25	0.8	H_2O, gly, oil	0.57	161 SFB	161 SFB
5	C-Apochromat 40x/1,20 W DIC 440052	III	40	1.2	H_2O	0.29	3 Ni	
6	Plan Neofluar 100x/1,3 Oil 440480	III	100	1.3	oil	0.2	9 Ni	9 Ni

Do not exchange Pos. 1, A-Plan 10x/0.25 Ph1 (Parfocality Master)

Filter Pos.	Filterset	Excitation	DC/Beamsplitter	Emission	Dye	Filter number
1	DIC	-	-	-	-	147
2	FSet 49	BP 365	FT 410	BP 477/60 SR	DAPI	160
3	61 HE	BP 474/28 BP 585/35	DFT 495 + 605	DBP 527/54 + 645/60	Alexa488 + mCherry	263
4	GFP	HQ 470/40	FT 500	BP 530/50	GFP, FITC	250
5	FSet 43 HE	BP 550/25	FT 570	BP 605/70	DsRed	032
6	SR Cy5	BP 640/30	FT 660	BP 690/50	Cy5, Alexa633	253

To Imaging 1 – filters for exchange

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Imaging 1

Objectives and optical filters – for exchange

Pos.	Objective	DIC	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number	DIC
	EC Plan Neofluar 2,5x/0,085 420320-9902	-	2.5	0.085	air	8.8	227 LIC	-
	Plan Neofluar 10x/0,30 440330	II	10	0.3	air	5.6	5 Ni	-
	LD A-Plan 20x/0,30 Ph1 1006-591	II	20	0.3	air	4.3	79 ZL	PlasDIC 79 ZL
	LD-A-Plan 40x/0,50 Ph2 1006-595	III	40	0.5	air	2	78 ZL	PlasDIC 78 ZL
	LD Plan Neofluar 40x/0,6 Korr Ph2 M27 421361-9970	III	40	0.6	air	2.9 at cover glass 0.75	225 F	-
	LD-Achroplan 63x/0,75 Ph2 440861	III	63	0.75	air	1.57	24 WD	
	C-Apochromat 63x/1,2 W 440668-01	III	63	1.2	H_2O	0.28	44 WD	-
	Plan-Apochromat 63x1,40 Oil DIC M27 420782-9900	III	63	1.4	oil	0.19	226 F	226 F

Filter Pos.	Filterset	Excitation	DC/Beamsplitter	Emission	Dye	Filter number
	F37-457 AHF	HC 406/15	HC BS 425	HC 457/50	CFP-UV	149
	FSet 47 HE	BP 436/25	FT 455	BP 480/40	CFP, eCFP	150
	F37-524 AHF	HC 406/15	HC-BS 425 DCLP	---	Ex. CFP Em. YFP	151
	AHF	No excitation	ET 515 LP	ET 535/30	GFP	152
	FSet 46 HE	BP 500/25	FT 515	BP 535/30	YFP	251

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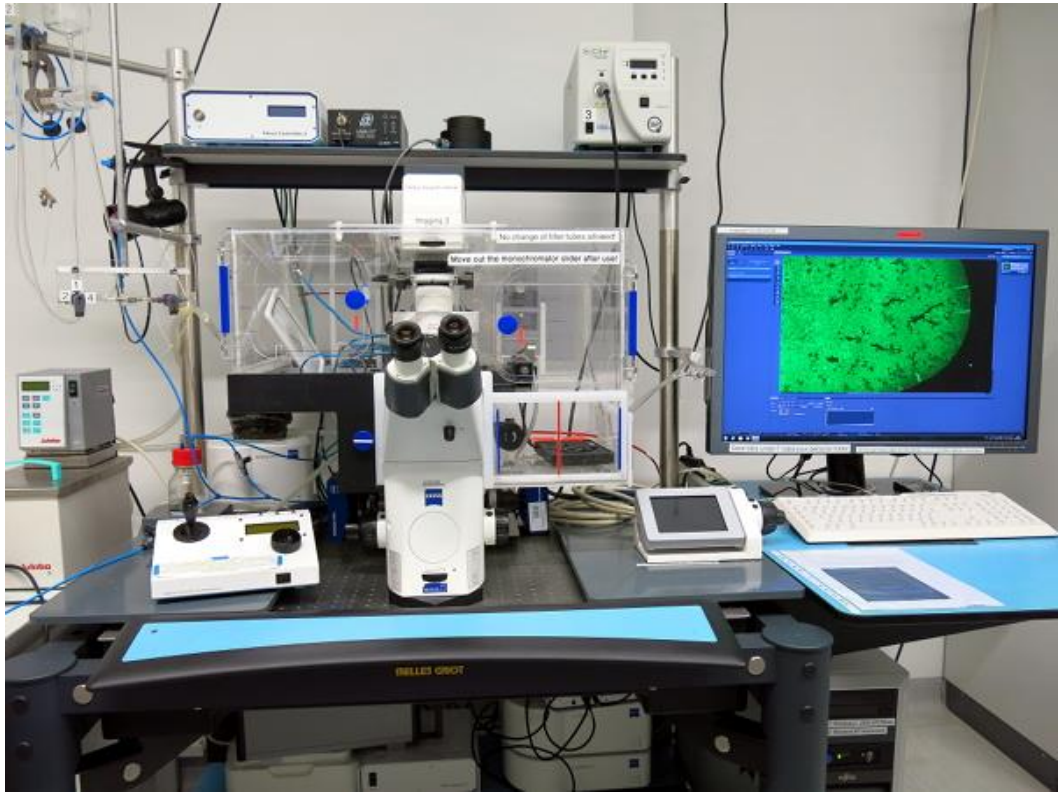
Imaging 3

Zeiss Cell Observer, inverted microscope



Live-cell time-laps imaging setup with

- Multi-location 3D-XFP ratio imaging
- Fluorescence illumination (X-Cite® exacte)
- Monochromator (Till Photonics)
- Definite Focus II
- Fast Z-table (ASI)
- Motorized xy-table for multi location and tile-image recording
- 2 cooled CCD cameras (Axiocam MRm Rev.3 1388x1400 and Axiocam 506 mono 2752x2208)
- CO_2 Incubator
- Software ZEN Blue (ZEISS)

(industry collaboration R.N. and own funding from R.N.)

To Imaging 3 objectives & filters

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Imaging 3
Objectives

Pos.	Objective	for UV	DIC	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number
1	Plan Apochromat 20x/0.8 M27 420650-9901	+	II	20	0.8	air	0.55	139 LIC
2	Plan Neofluar Pol 2.5x/0.075 440313	-	-	2.5	0.075	air	9.5	211 Ni kein DIC
3	Alpha-Plan Fluar 100x /1.45 oil DICIII 421190-9900	++	III	100	1.45	oil	0.11	146 LIC with DIC 71Ni SFB
4	Fluar 5x/0.25 440125	++	-	5	0.25	air	12.5	76Ni
5	Fluar 40x/1.3 Oil Ph3 M 27 440255	++	III	40	1.3	oil	0.16	140 LIC/schw kein DIC
6	LCI Plan-Neofluar 63x/1.3 Imm Korr Ph3 M27 420881-9970-000	+	III	63	1.3	H_2O, gly	0.17	142 LIC

Do not exchange Pos. 2 (Parfocality Master)

	EC Plan Neofluar 20x/0.5 Ph2 DICII 420351-9910	+	II	20	0.5	air	2	144 LIC kein DIC
	Fluar 40x/1.30 Oil Ph3 M27 420261-9910	++		40	1.3	oil	0.16	140 LIC
	Fluar 10x/0.50 M27	++	II	10	0.5	air	1.9	138 LIC
	EC Plan-Neofluar 10x/0.3 M27 PH1 420341-9911	+	I	10	0.3	air	5.2	143 LIC kein DIC

To Imaging 3 optical filters

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Imaging 3
Optical filters

Filters for direct visualization by eye:

Filter Pos.	Filterset	Excitation	DC/Beamsplitter	Emission	Dye	Filter number
1	38 HE Zeiss	BP 470/40 (HE)	FT 495 (HE)	BP 525/50 (HE)	GFP	213
2	43 HE Zeiss	BP 550/25	FT 570	BP 605/70	DsRed, Rhodamine	218
3	46 HE Zeiss	BP 500/25 DMR 25	FT 515 HE	BP 535/30 DMR 25	Alexa 488, eGFP, eYFP, FITC, Fluorescein, GFP (S65T), Rhodamine 110	215
4	DIC Zeiss	-	-	-	-	216
5	49 HE Zeiss	G 365	FT 395	BP 445/50	Alexa 350, BFP, DAPI	217
6			position for exchange			212

Only position 6 is available for additional filter cubes.
If you put in a filter cube, please leave it after use at this position.

	21 HE Zeiss modified	340 or 360 nm 380 or 405 nm	Clearing filter SP424 +	BP 510/90 HE	Fura-2 or Fura-8	212 auf Pos.6
	50 Zeiss	BP 640/30	FT 660	BP 690/50	Alexa 647/660, Cy 5, TOPRO-3, TOTO-3	047 atm in AxioImager
	47 HE Zeiss	BP 436/25 DMR 25	FT 455 HE	BP 480/40 DMR 25	CFP, eCFP	214
	custom	BP 460/80	ST 506	BP 578/105	BCECF	112
	AHF custom	ET 470/40	HC-BS 495	BP 700/75	RH 795 (voltage sensitive dye)	134
	F36-508 HC	BP 562/40	HC-BS 593	BP 641/75	mCherry	103/fehlt
	AHF custom	406 + 470 Monochromator + clearing 492/SP (Semrock)	T495lpxr	ET 535/50	pHLourin (wt-GFP ratio)	247
	Filterset Cy5	BP 640/30	FT 660	BP 690/50	Cy 5, Far Red	257

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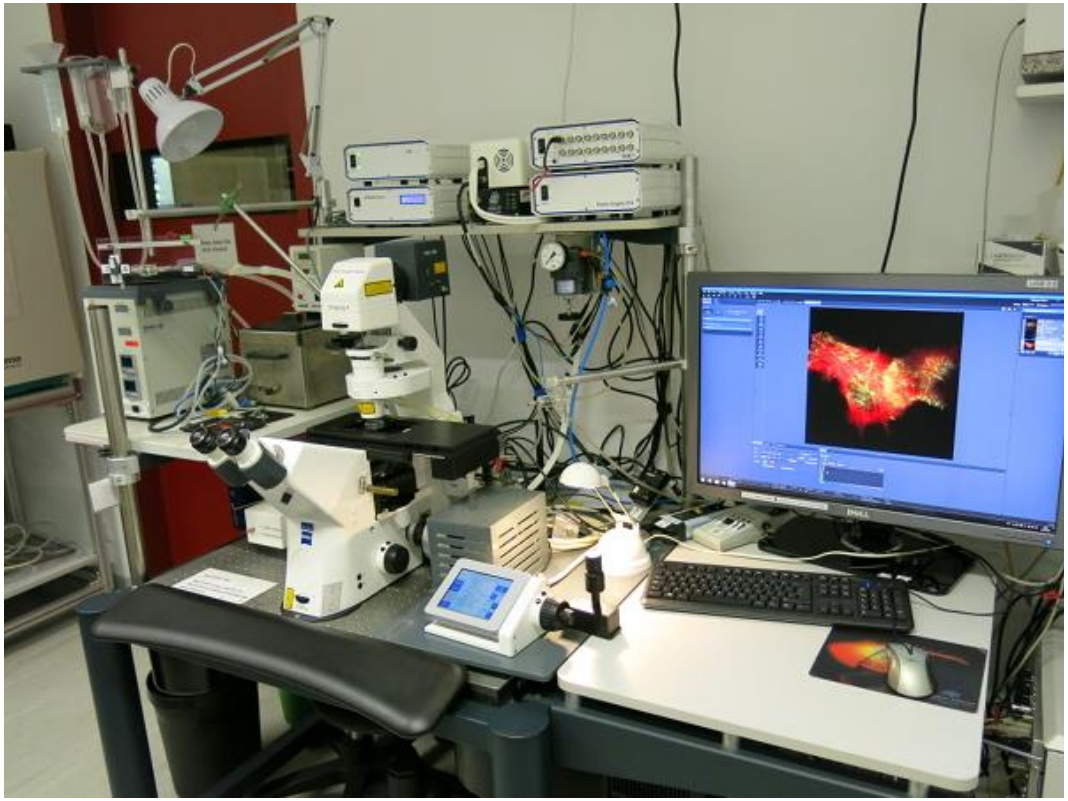
Imaging 4

Zeiss Cell Observer, inverted microscope with TIRF



Live-cell time-laps imaging setup with

- Multi-location 3D-XFP ratio imaging
- TIRF laser illumination (458, 488, 514, 561 nm)
- Sutter DG-4 wavelength switcher
- Definite Focus II
- Motorized xy-table for multi location and tile-image recording
- 2 cooled CCD cameras (Axiocam Rev.3 1388x1400)
- EMCCD camera Evolve (optimized field of view 512x512 imaging array)
- Software ZEN Blue (Zeiss)

(FRISYS funding to M. Simons collaboration with R.N.)

To Imaging 4 objectives & filters

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Imaging 4
Objectives and optical filters

Pos.	Objective	DIC	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number
1	EC Plan Neofluar 5x/0.16 PH1 420331-9911	-	5	0.16	air	18.5	137 LIC
2	LD LCI Plan-Apochromat 25x/0.8 DIC Imm Korr (UV) VIS-IR 420852-9870	II	25	0.8	oil, H_2O, gly	0.57	168 FRI
3	LD Plan Neofluar 20x/0.4 PH2 421351-9970-000	II	20	0.4	air	0.19	224 F kein DIC
4	Fluar 40x/1.30 Oil DIC 420260-9900	III	40	1.3	oil	0.16	169 FRI
5	Alpha-Plan-Apochromat 100x/1.46 Oil DIC (UV) VIS-IR 420792-9800	III	100	1.46	oil	0.11	185 LIC
6	TIRF1x/- calibration objective	-	1	-	-	Do not remove!	171 FRI
for exchange	Fluar 100x/1,30 Oil	III	100	1.3	oil	0.17	74 Ni SFB
for exchange	iPlan Apochromat 63x/1.4 oil DIC 420782-9900-720	III	63	1.4	oil	0.19	170 FRI

Filters for direct visualization by eye and camera:

Filter Pos.	Filterset	Fluorochrome	Filter number
1	FSet 49 Zeiss	DAPI	#068
2	FSet 46 HE Zeiss	YFP	#069
3	TIRF 561	DsRed, Cy3	#276
4	TIRF 488	GFP	#275
5	DIC	DIC	#072
6	FSet 74 HE Zeiss	GFP/mRFP	#073/ na

Currently in Pos 6: #077 (box9)

To Imaging 4 more optical filters

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Imaging 4
Optical filters

Additional for exchange:

Filterset	Excitation	DC/Beamsplitter	Emission	Dye	Filter number
FSet 47 HE	BP 436/2v5	BS 455	BP 480/40	CFP	#117
Filter Set 64 HE	BP 587/25	FT605	BP 647/70	Cy3	#256

Additional for exchange (in Box 9 and Box 10 (dual camera)):

Placement	Usage	Excitation	Filterset	Fluorochrome	Filter number
Microscope revolver	WF	Sutter	FSet 21 HE Zeiss (modified)	Fura-2 or Fura-8	#075
Microscope revolver	TIRF / WF with FNo076	Laser or Sutter	FSet 78 HE (1)Zeiss	CFP/YFP	#074
Dual-camera head	TIRF / WF with FNo074	Laser or Sutter	FSet 78 HE (2)Zeiss	CFP/YFP	#076
Microscope revolver	TIRF / WF with FNo080	Laser	FSet 79 HE ms (1) Zeiss	GFP/DsRED	#077
Dual-camera head	TIRF / WF with FNo077	Laser or Sutter	FSet 79 HE ms (2) Zeiss	GFP/DsRED	#080
Dual-camera head			FSet 424928 (01)	Mirror 50/50	#078
Microscope revolver	TIRF with FNo076	Laser or Sutter	FSet TIRF	CFP/YFP	#079
Dual-camera head	TIRF / WF with FNo079	Laser or Sutter	FSet 78 HE (2)Zeiss	CFP/YFP	#076
Microscope revolver	Ratio WF (FNo113 + 116) or laser 457 + 488	Laser or Sutter	HC460/80; BS506; HC578/105	BCECF	#112
Microscope revolver	WF	Sutter	HC628/40; FT700/75; LP660	Cy5	#16
Microscope revolver	WF with FNo244 + 248	Sutter	T495lpxr; BP 535/50	pHlourin (ratio)	#246

Filter for Sutter:

Name	Usage	Filter number
BP 340/30 for FSet 21 HE	Fura-2	#120
BP 387/15 for FSet 21 HE	Fura-2	#121
BP 445/25 for FSet 78 ms	CFP	#114
BP 510/15 for FSet 78 ms	YFP	#122
BP 470/27 for FSet 79ms (1)	GFP	#118
BP 556/25 for FSet 79 ms (1)	DsRed/mRFP	#119
BP 473/10 for Fset 246	pHlourin (ratio)	#248
BP 406/15 for Fset 246	pHlourin (ratio) or Fura-8	#244
BP 488/6 for FSet112	BCECF	#113
BP 436/10 for FSet112	BCECF	#116

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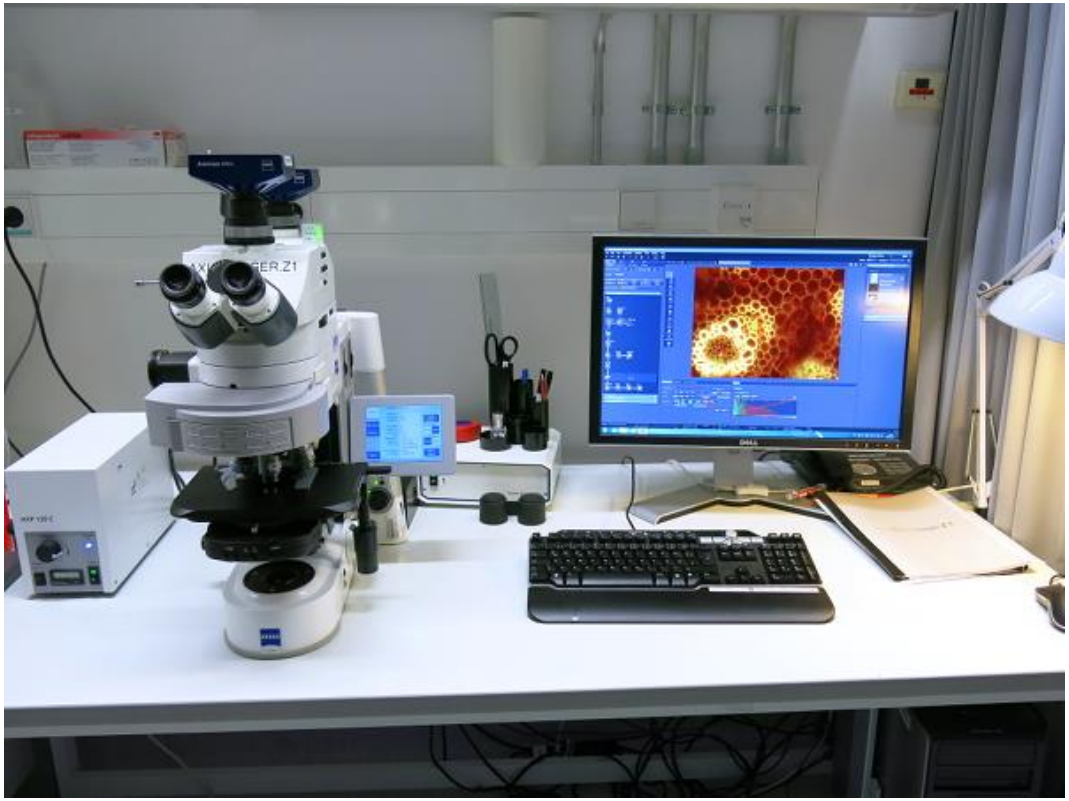
Axio Imager

Zeiss AxioImager Z1, upright microscope



- Wide-field upright microscope (Filter cubes for: DAPI, GFP, DsRed, YFP, CFP and Cy5)
- Motorized xy-table for multi location and tile-image recording
- Fluorescence illumination (ZEISS HXP 120 C lighting unit)
- 1st camera: Axiocam MRm Rev.3 (1.4 MP, 1388 x 1040, black/white, cooled CCD camera)
- 2nd camera: Axiocam 208 (8.3 MP, 3840 (H) × 2160 (V), color, cooled cMOS camera)
- ZEN BLUE software (ZEISS)

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Axio Imager
Objectives

Pos.	Objective	Magnification	DIC	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number	DIC
1	Plan-Apochromat 5x/0,16 420630-9900	5	Bright Field	0.16	air	12.1	186 LIC	-
2	Plan-Apochromat 10x/0,45 420640-9900	10	II	0.45	air	2	187 LIC	187 LIC (1045-073)
3	Plan-Apochromat 20x/0,8 420650-9901	20	II	0.8	air	0.55	188 LIC	188 LIC (426940)
4	Plan-Apochromat 63x/1,4 DIC Oil 420782-9900	63	III	1.4	oil	0.19	189 LIC	189 LIC (426957)
5	Plan-Apochromat 40x/0,95 Korr 440654-9902	40	III	0.95	air	0.25	165 LIC	165
6	empty	-	-	-	-	-	-	-

Do not exchange Pos. 5, Plan-Apochromat 40x/0,95 (Parfocality Master)

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Axio Imager
Optical filters

Filters for direct visualization by eye and camera:

Filter Pos.	Filterset		Fluorochrome	Filter number
1	empty	-	-	-
2	DIC 424931 (01)	DIC Analyser	DIC	140
3	DAPI SR (424931)		DAPI, Hoechst	141
4	FSet 38 He Zeiss (424931)	BP 470/40 FT 495 BP 525/50	GFP, Alexa488	142
5	FSet 43 Zeiss (424931)	BP 550/25 FT 570 BP 605/70	Alexa546, DsRed	143
6	FSet 46 HE Zeiss (424931)	BP 500/25 FT 515 BP 535/30	YFP	144
7	CFP (from Imaging 2)	-	CFP	23
8	FSet50 Cy5	BP640/3 FT660 BP690/50	Cy5	47
9	empty	-	-	-
10	empty	-	-	-

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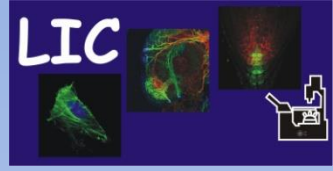
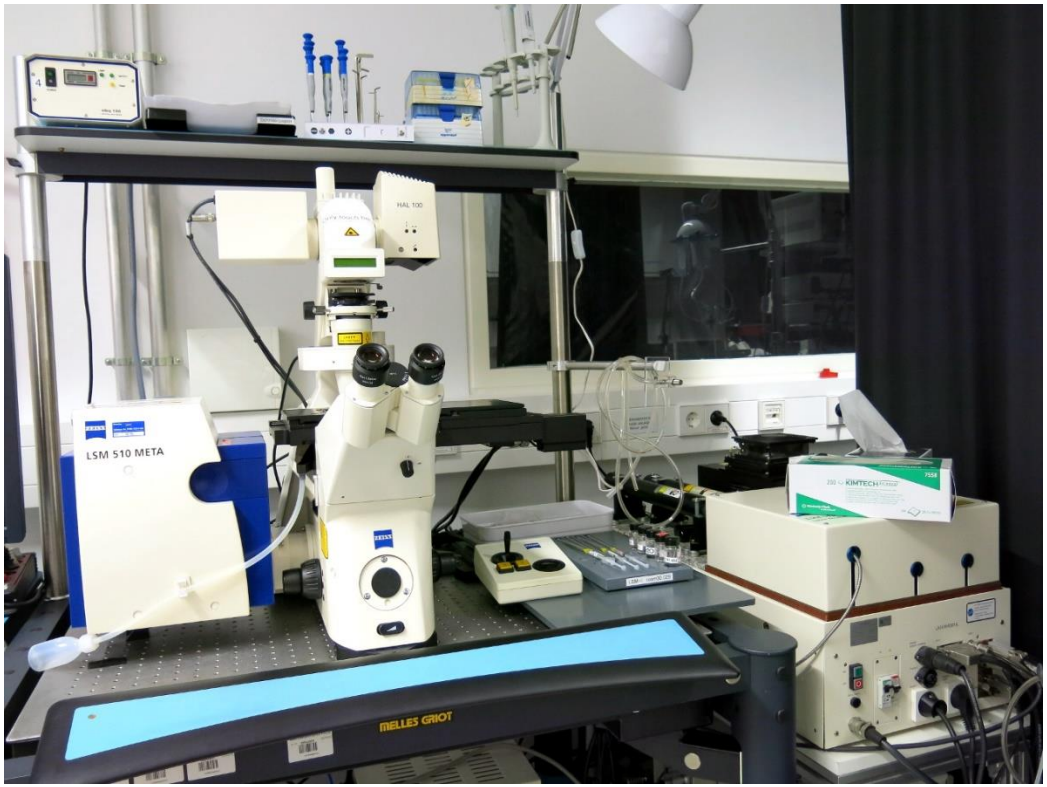


Confocal microscopes

LSM-I
Zeiss LSM 510 META (inverted)



3-channel confocal microscope with

- 458, 488, 514, 543, and 633 nm laser lines
- META detector
- Motorized xy-table for multi location and tile-image recording
- Software ZEN 2010 (Zeiss)

NOTE !
not useful for XFP combinations CFP + GFP, GFP + YFP and CFP + YFP. Combination of these XFPs alone with DsRed or similar one however are possible.

(Loan of Hautklinik – Prof. Bruckner-Tudermann to the LIC)

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LSM-I
Objectives

LSM-I

Pos.	Objective	For 2-P	DIC	Collimator *IR/VIS UV/NIR*	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	DIC	Internal number
1	Plan-Apochromat 10x/0.45 440639	-	-		10	0.45	air	5.6	-	66 Ni SFB
2	Plan-Apochromat 20x/0.75 440649	+	II		20	0.75	air	0.61	75 Ni	75 Ni SFB
3	LD LCI Plan-Apochromat 25x/0.8 DIC Imm Korr (UV-VIS-IR) 440842-9870	++	II		25	0.8	H_2O, gly, oil	0.57	131 LIC	131 LIC
4	C-Apochromat 63x/1.2 W Korr 440668	++	III		63	1.2	H_2O	0.24	77 LIC	243 LIC
5	Plan Apochromat 63x/1.4 Oil 440762-9904	++	III		63	1.4	Oil	0.19	5ICF	213 Ni
6	empty									

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LSM-I
Optical filters

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome	Filter number
1	empty	-	-
2	FSet 01 Zeiss	DAPI, Hoechst	53
3	FSet 44 Semrock	CFP	38
4	FSet 09 Zeiss	GFP	55
5	FSet 15 Zeiss	DsRed	56
for exchange:	FSet 041028 Chroma in Box # 5	YFP	54

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LSM-I-NLO

Zeiss LSM 880 (inverted), with AiryscanFast

Zeiss LSM880 with full confocal and multiphoton capabilities and …

- META detector
- 405, 458, 488, 514, 561, 633 nm laser lines
- Definite Focus II
- Tokai Hit CO_2 inkubator and heating unit
- Two 2-photon laser “Discovery one” with tuning range 690–1340 nm and fixed 1040 nm (Coherent)
- Non-descanned (NDD) detectors (for multiphoton excitation)
- Motorized xy-table for multi-location and tile-image recording
- Software ZEN 2.3 (Zeiss)

To LSM-I-NLO objectives & filters

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LSM-I-NLO
Objectives

Pos.	Objective	For 2-P	DIC	Collimator V	Collimator NLO	Collimator NLO2	Magnification	Num. Aperture	Imm. Medium	Working distance	Internal number
1	EC Plan Neofluar 10x /0,30 440330-9902-000	++	-	0.01	0	0	10	0.45	air	5.2	192
2	LD LCI Plan Apochromat 25x/0,80 DIC 420852-9870-000	++	II				25	0.75	H_2O, gly, oil	0.57	217 Ni
3	C-Achroplan 32x/0,85 W 420967-9970-000	+++ ++	II	1.2	0.6	0.5	32	0.8	H_2O	1.1	237 LIC
4	LD-C-Apochromat 63x/1,15 W Korr UV-VIS-IR 421887-9970-000	+++ ++	III	0.94	1.3	0.4	63	1.2	H_2O	0.6	239 LIC
5	Plan-Apochromat 63x/1,40 420782-9900-799	++	III	0.32	1	0.35	63	1.4	Oil	0.19	238 LIC
6	C-Achroplan 40x/0,80 440090-9901-000	+	III		?		40		water, wateroil	3.61	122 LIC

Do not exchange Pos. 2 (Parfocality Master)

Additional for exchange:

Plan-Apochromat 20x/0,80 420650-9901-000	++	II	-0.14	0.6	0.35	20	0.8	air	0.55	236 LIC
EC Epiplan Neofluar 5x/0,13 000000-1156-511	-					5	0.13	air	15.8	240 LIC
Apo 5x Calibration LSM 420639-9000-700										241 LIC

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LSM-I-NLO
Optical filters

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome	Filter number
1	FSet 01	DAPI	-
2	AF 488	GFP	
3	15 AF 546	DsRed	
4	BS-MP UV 690		
5	BS-MP 760		
6	100% Mirror		
for exchange:			

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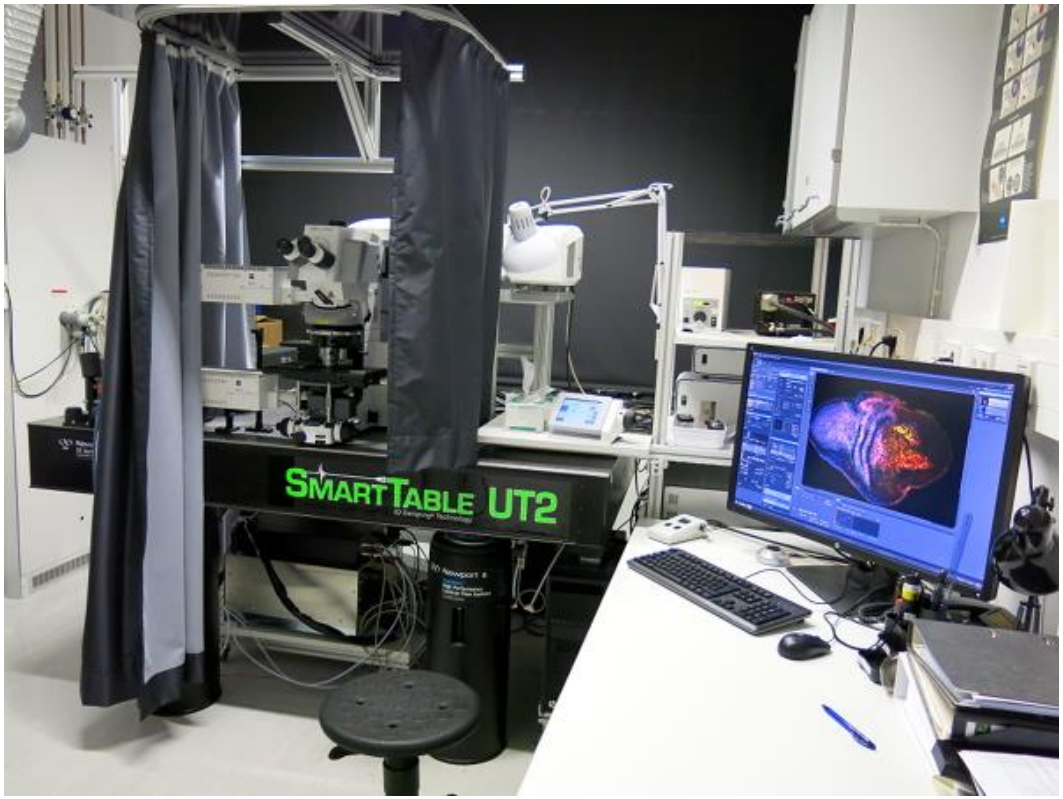
LSM-U-NLO

Zeiss LSM 880 NLO (upright), with AiryscanFast



Zeiss LSM880 with full confocal and multiphoton capabilities and …

- META detector
- 458, 488, 514, 561, 633 nm laser lines
- 2-photon laser “Vision II” with tuning range 690–1040 nm (Coherent)
- Non-descanned (NDD) detectors (for multiphoton excitation)
- Motorized xy-table for multi-location and tile-image recording
- Recommended for cleared samples
- Software ZEN 2.3 (Zeiss)

To LSM-U-NLO objectives & filters

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LSM-U-NLO
Objectives

Pos.	Objective	For 2-P	DIC	Collimator V	Collimator NLO	Magnification	Num. Aperture	Imm. Medium	Working distance	Internal number
1	Plan-Apochromat 10x/0.45 1063-139		-	0.28	-0.15	10	0.45	air	2	2 ICF
2	Plan Apochromat 40x/1,40 Oil 420762-9900-000		III	-0.08	0.2	40	1.4	oil	0.13	233 LIC
3	W-Plan Apochromat 20x/1,00 DIC(UV)VIS IR 421452-9800		II			20	1	H_2O	1.8	233 LIC
4	LD-LCI Plan Apochromat 25x/0,8 DIC 420852-9871-000		II	0.12	0.35	25	0.8	air, H_2O, oil, gly, silicone oil	0.57	234 LIC

Change objectives only at this position

Additional for exchange:

Clr-Plan Neofluar 20x/1,0 Corr 421459-9970	II			20	1	clearing	5.6	235 LIC
C-Apochromat 63x/1,2 W Korr 441777	III	-0.08	0.21	63	1.2	H_2O	0.28	8 Ni
W-Plan Apochromat 63x/1,0 Water 441470-9900	III			63	1	H_2O	2.1	109 LIC
C-Apochromat 63x/1,2 W Korr 440668 (01)	III			63	1.2	H_2O	0.28 at cover glass 0.17	77 LIC
W-Plan Apochromat 63x/1,0 Water 441470-9900	III			63	1	H_2O	2.1	109 LIC

To LSM-U-NLO optical filters

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LSM-U-NLO
Optical filters

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome	Filter number
1	empty	-	-
2	38 HE GFP AL-	GFP	
3	43 HE AL-	DsRed, RFP	
4	49 DAPI AL-	DAPI	
5	C-DIC RL AL-	DIC	
6			
for exchange:			

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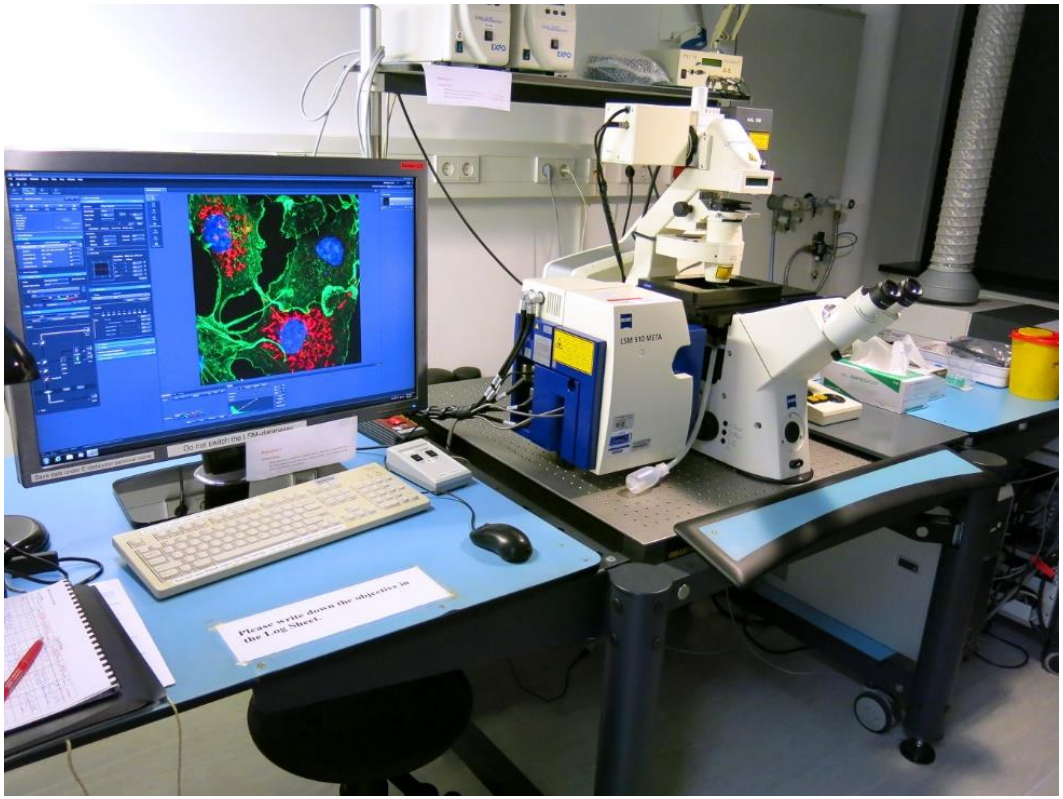
LSM-I-DUO-LIVE

Zeiss LSM 5 DUO Live (inverted)



3-channel + META detector spectral confocal with

- 405, 458, 488, 489, 514, 532, 561, 635 nm laser lines
- Two confocal scan heads: LSM 510 Meta and LSM 5 Live for high-speed imaging
- Specialized for photo-activation and conversion experiments
- Motorized xy-table for multi location and tile-image recording
- Software ZEN 2010 (Zeiss)

(funded by DFG-Highlight to R.N. + collaborators)

To LSM-I-DUO-Live objectives & filters

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LSM-I-DUO-LIVE
Objectives

Pos.	Objective	For 2-P	DIC	Collimator *IR/VIS UV/NIR*		Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number
1	Plan Neofluar 10x/0.30 440330	+/-	II			10	0.3	air	5.6	H 156 with DIC #138
2	Plan-Apochromat 40x/1.3 Oil DIC (UV) VIS-IR M27 420762-9800	+	III	0,28	-1,55	40	1.3	oil	0.21	145 LIC
3	LD LCI Plan Apochromat 25x/0.8 DIC Imm Korr (UV)-VIS-IR 420852-9870	+/-	II	W: 0,15 G: 0,05 O: 0,05	W: -1,75 G: -1,25 O: -1,65	25	0.8	H_2O, oil, gly	0.57	128 SFB
4	C-Apochromat 40x/1.2W Korr UV-VIS-IR 421767-9970	+	III	0,15	-1,35	40	1.2	H2O	0.29	120 LIC with DIC 132
5	LCI-Plan Neofluar 63x/1.3 DIC Imm Korr 420882-9970	+	III	G: 0,15 H_2O: 0,25	G: -0,15 H_2O: -1,45	63	1.3	Gly, H_2O	0.17	118 LIC
6	Plan Apochromat 100x/1.4 Oil DIC 420792-9900	+	III	0,05	-1,65	100	1.4	oil	0.17	119 LIC

Do not exchange Pos. 1 (Parfocality Master)

Additional for exchange:

	Plan-Apochromat 20x/0.8 420650-9900	+/-	II	0,20	-1,45	20	0.8	air	0.55	117 LIC
	2 mal C-Achroplan 40x/0.8 W 1080-378		II			40	0.8	ater, Water	3.61	ICF 8+ 122LIC

To LSM-I-DUO-Live optical filters

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LSM-I-DUO-LIVE
Optical filters

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome	Filter number
1	FSet 43 Zeiss	DsRed, Rhodamine	61
2	FSet 38 HE Zeiss	GFP	60
3	empty	-	-
4			228
5			229
for exchange	Fset 01 Zeiss	DAPI	62
for exchange	FSet 46 HE Zeiss	YFP	63
for exchange	FSet 47 Zeiss	CFP	64
for exchange	FSet F51-017 AHF	CFP/YFP	65
for exchange	DIC	-	66

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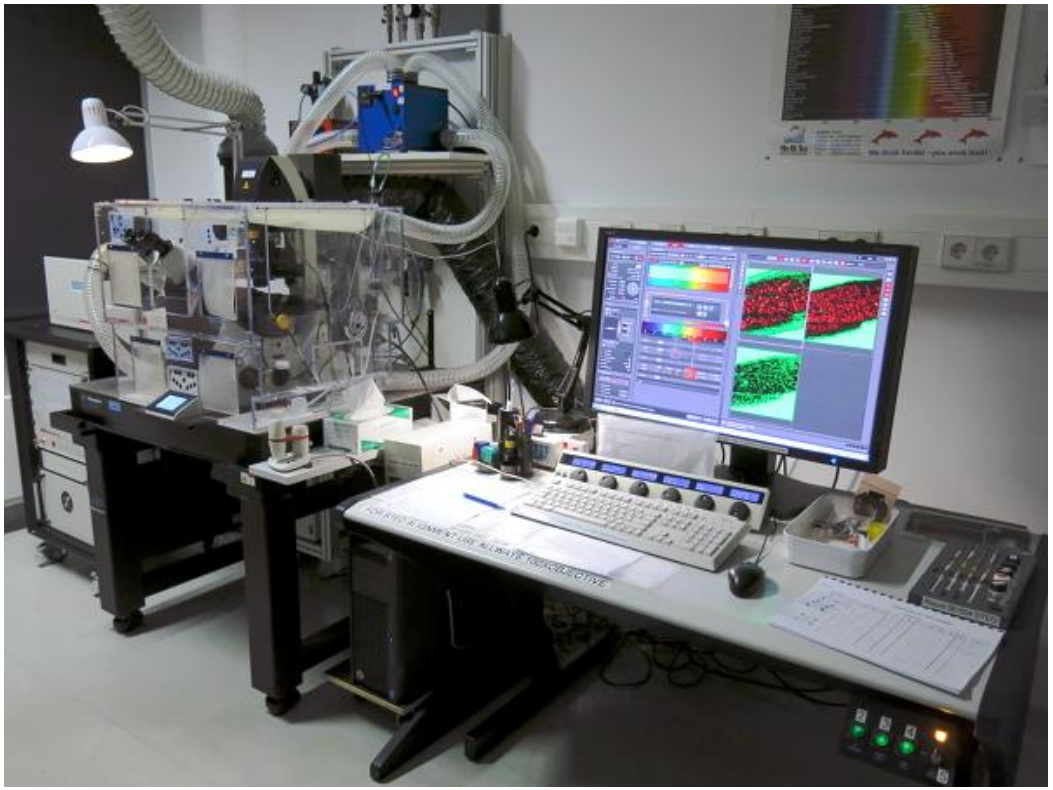
LEICA STED

Leica TCS SP8 gated 3D-STED (inverted)



Super-Resolution gated STED Microscope - Leica TCS 8ST-WS

- Inverted Leica DMI6000
- Z-Galvo table
- Motorized xy-table for multi location and tile-image recording
- VIS-Ar (65 mW: 458, 476, 488, 496, 514 nm) and UV-Diode 50 mW: 405 nm)
- Pulsed white light laser (VIS-WLL avg. power 1.5 mW: 470–670 nm
- Depletion laser: 2 continuous wave lasers (592 and 660 nm), 1 pulsed laser (775 nm)
- Time Gated Detection
- Spectral Detection Range (400–720 nm)
- 2 Hybrid Detectors (high sensitive low noise)
- AOTF VIS: up to 8 channel and AOTF UV)
- Resonant Scanner 8 kHz (Max. Frame Res: 1024x1024 px; Scan-Zoom: 1.3–48x)

(funding by DFG 91b grant to the Faculty of Medicine, Institute for Anatomy and Cell Biology, Department of Molecular Embryology, Prof. Dr. K. Krieglstein)

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LEICA STED
Objectives

Pos.	Objective	Magnification	Num. Aperture	Imm. Medium	Working distance	Internal number
1	HCX PL Fluotar 5x/0.15 11(506224)	5	0.15	air	13.7	195 K
2	HC PL APO CS2 IMM CORR 20x/0.75 11(506343)	20	0.75	H_2O, gly, oil	0.68	190 K
3	HC PL APO CS2 40x/1.30 11(506358)	40	1.3	oil	0.24	192 K
4	HC PL APO CS2 63x/1.40 11(506350)	63	1.4	oil	0.14	193 K
5	HC PL Apo mot Corr STED White 93x/1.30 Art.Nr.38 Ser.Nr.15506417	93	1.3	gly	0.3	244 Ni
6	empty					

Do not exchange Pos. 5 (Parfocality Master)

Advice from Leica Service: To mount the 100x objective HCX PL APO 100x/1.40 (STED mode), replace HC PL APO CS2 40x/1.30 (Pos. 3).

Additional for exchange:

	HC PL APO CS2 Mot CORR 63x/1.20 11(506361)	63	1.2	Water	0.3	191 K
Exchange only 40x objective	HCX PL APO 100x/1.40 11(506378)	100	1.4	Oil	0.13	194 K
2	HC PL APO 63X/1.30 GLYC CORR CS2 11(506353)	63	1.3	Glycerine	0.3	196 K

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LEICA STED
Optical filters

Filters for direct visualization by eye:

Position	Filterset	Fluorochrome
1	Filter Set GFP ET BP 470/40 DS 495 BP 525/50	GFP
2	Filter Set CFP/YFP ET BP 490/20 BP 405/12 DS 435/505 BP 450/50 BP 550/50	CFP/YFP
3	ANA (Analysator)	DIC
4	empty	confocal mode
5	A Filter Set DAPI	DAPI
6	Y3 DsRed BP 545/40 DS 565 BP 610/75	DsRed

Additional for exchange:

	I3	DsRed longpass
	Y5 ET BP 620/60 DS 660 BP 700/75	CY 5
	N2.1	GFP longpass

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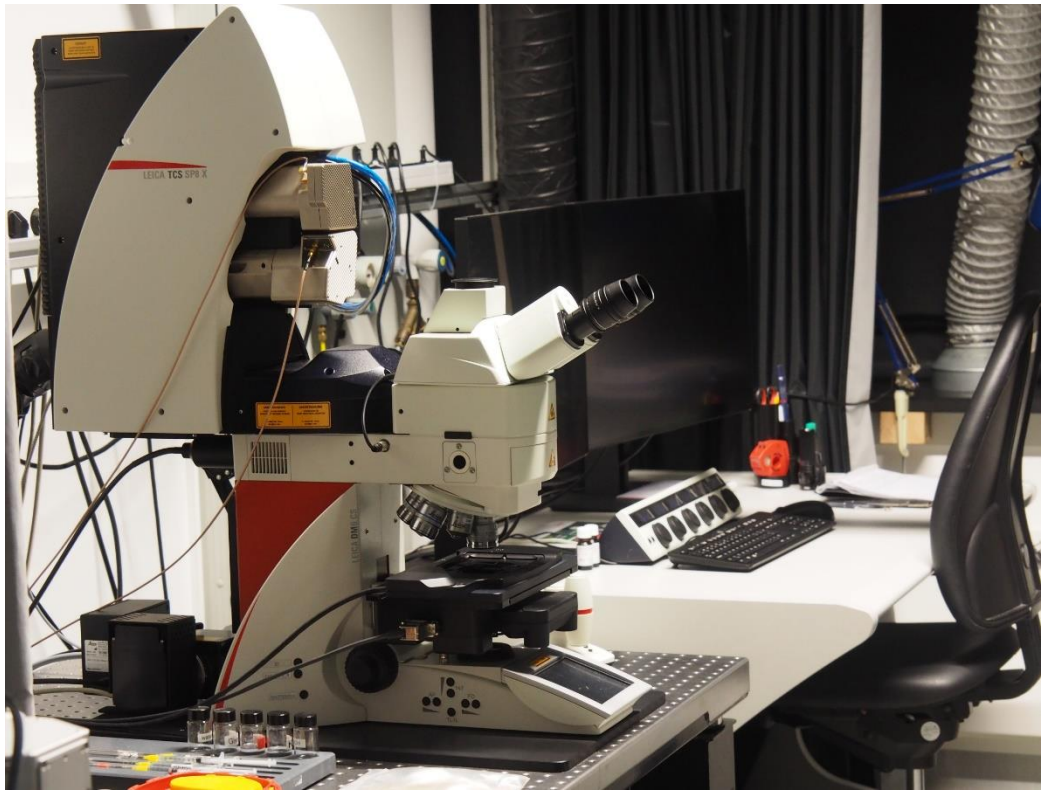
SP8-U-FLIM

LEICA TCS SP8 Falcon FLIM (upright)



SP8 FALCON (FAst Lifetime CONtrast) for Fluorescence Lifetime Imaging (FLIM)

- 405, 458, 488, 514 nm laser lines
- Pulsed laser (VIS-WLL avg. power 1.5 mW: 470–670 nm)
- Pulsed white light laser (VIS-WLL avg. power 1.5 mW: 470–670 nm
- Time Gated Detection
- Spectral Detection Range (400–720 nm)
- 2 Hybrid-Detectors (high sensitive low noise)
- 2 standard PMTs
- AOTF VIS: up to 8 channel and AOTF UV)

(funding by a DFG 91b grant to Faculty of Biology, Plant Cell Biology, Prof. Dr. T. Ott)

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SP8-U-FLIM
Objectives

Pos.	Objective	DIC	Magnification	Num. Aperture	Immersions-medium	Working distance (mm)	Internal Number
1	HCPL FLUOTAR 10x/0.30 (506505)	-	10	0.30	air	11.0	245
2	20x/0.75 HC PL APO CS2 IMM CORR (506343)	+	20	0.75	Water, Glyc. or Oil	0.67	246
3	25x/0.95 W HC FLUOTAR L VISIR (506374)	+	25	0.95	Water	2.50	247
4	HC PL APO CS2 40x/1.10 W (506357)	+	40	1.10	Water	0.65	248
5	HC PL Apo 63x/1.20 W CORR CS2 (506346)	+	63	1.20	Water	0.30	249
6	HC PL APO 63x/1.40 OIL CS2 (506350)	+	63	1.40	Oil	0.14	250
7	HC PL APO 40x/1.30 Oil CS2 (506358)	-	40	1.30	Oil	0.24	256

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SP8-U-FLIM
Optical filters

Position	Filterset	Fluorochrome
1	Filterset GFP ET, k (Ex.470/40; Em. 525/50)	GFP
2	Filtersystem RHOD ET,k (Ex. 546/10; Em. 585/40)	RFP
3	Filtersystem CFP/YFP (Ex. 436/12, 500/20; Em. 467/37, 545/45)	CFP/YFP
4	Filtersystem DAPI ET,k (Ex. 360/40; Em. 470/40)	DAPI

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A1 CLEM
Nikon LSM A1 CLEM (inverted)

3-channel + spectral detector confocal microscope with

- 405, 458, 488, 514, 561, 635 nm laser lines
- Special dedicated to long time live cell imaging by using the CLEM technology and perfect focus system (PFS)
- Motorized xy-table for multi-location and tile-image recording
- Software NIS 3.2 (Nikon)

(funded by DFG to R. Baumeister)

To A1 CLEM objectives & filters

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A1 CLEM
Objectives and optical filters

Pos.	Objective	For UV	DIC	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number
1	CFI Plan Apo 10x0,45 WD DIC N1		-	10	0.45	air	4.0	148 Ba
2	CFI Plan Fluor 20x0,75 Mimm WD DIC N2		N2	20	0.75	water w/wo cover glass glyc w/wo cover glass, oil	0.33–0.35	149 Ba
3	CFI Plan Fluor 40x1,30 Oil WD DIC H/N2		N2	40	1.3	oil	0.2	150 Ba
4	CFI Plan Apo VC 60x1,40 Oil WD DIC N2		N2	60	1.4	oil	0.13	151 Ba
5	CFI Plan Apo VC 60x1,20 WI WD		N2	60	1.2	H_2O	0.27	152 Ba
6	Apo LWD 40x/1,15 WI DIC N2		N2	40	1.15	H_2O	0.6	166 Ba

Filters for direct visualization by eye:

Filter Pos.	Filter name	Filter	Dyes	Internal number
1	Ex 340-380, DM400, BP 435-485	DAPI	DAPI, Hoechst 33342	96
2	EGFP HC-Filterset (Bandpass)	GFP	GFP, Cy 2	97
3	TRITC HC Filterset (Bandpass)	TRITC	TRITC, Cy 3	98
4	DIC	DIC-Analyse	-	99
5	CFP HC -Filterset	CFP	CFP	100
6	empty	empty	empty	-
for exchange	Cy 5 HC-Filterset	Cy 5	Cy 5, Toto	102
for exchange	F SET 64 HE	mCherry	mCherry	255
for exchange	YFP HC-Filterset	YFP	YFP	101
for exchange	mCherry	mCherry	mCherry	111
for exchange				

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SD-I-ABL

ZEISS Spinning disk with laser ablation (inverted)

Live cell time-lapse imaging setup for

- Multi-location 3D-imaging with Spinning disk unit (CSU-22, Yokogawa)
- Definite focus II
- Motorized xy-table for multi-location and tile-image recording
- 2 cooled CCD cameras (Axiocam MRm Rev.3, 1300 x 1040,
- Ablation and photoactivation unit (Rapp OptoElectronic) with 355 nm, 405 nm and 471 nm laser
- Software ZEN Blue (Zeiss)

(funding by DFG grant 91b to W. Driever and R.N. and BIOSS EXC 294)

To SDI-I-ABL objectives & optical filters

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SD-I-ABL
Objectives

Pos.	Objective	DIC	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number	DIC
1	Plan-Apochromat 10x/0.45 420640-9900	II	10	0.45	air	2	172 WD	**172 WD** 1045-073
2	LD LCI Plan-Apochromat 25x/0.8 DIC Imm Korr DIC M27 420852-9870	II	25	0.8	H_2O, gly, oil	0.57	173 WD	**173 WD** 426947
3	LD-C Apochromat 40x/1.1 W Korr UV-VIS-IR 421867-9970	III	40	1.1	H_2O	0.62	174 WD	**174 WD** 426948
4	C-Apochromat 63x/1.2 W M27 421787-9970	III	63	1.2	H_2O	0.28	175 WD	**175 WD** 426946
5	Plan-Apochromat 63x/1.4 Oil DIC M27 420782-9900	III	63	1.4	Oil	0.19	141 LIC	**141** 426957
6	EC Plan Neofluar 20x/0.5 air 420350-9900	II	20	0.5	air	2	155 Ni	DIC fehlt

Do not exchange Pos. 6 (Parfocality Master)

Additional for exchange:

Plan Neofluar 40x/1.3 Oil 440450	III	40	1.3	oil	0.17	18 Ni	

To SD-I-ABL optical filters

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SD-I-ABL
Optical filters

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome	Internal number
1	FSet 38 HE Zeiss	GFP	081
2	FSet 43 HE	DsRed, Cy3	082
3	FSet 49	DAPI	083/fehlt
4	for abblation	FT423/QG475	125
5	empty	-	-
6	DIC	-	084

Filter configuration Scanhead of SD-I-ABL

	Filter wheel (left camera)	
Position	**Filter**	**for**
1	BP 525/50	GFP
2	DBP 527/54 + 645/60	GFP + red dyes
3	BP 629/62	(for red emission dyes)
4	DIC	
5	closed	
6	closed	
	Filter (top camera)	
	BP	for RFP
	used only with dual camera acquisition	
	Dichroic filters	
1	FT 405/488/561	
2	empty	
3	empty	

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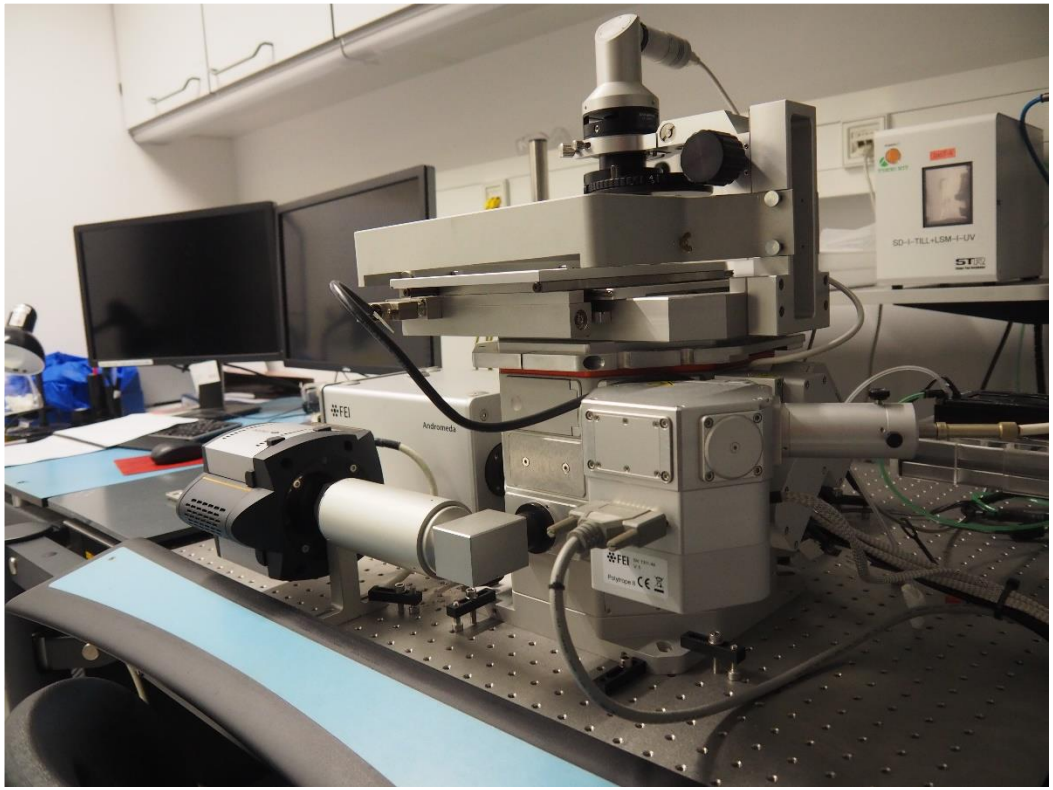
SD-I-TILL

TILL Spinning disk, TIRF, photomanipulation (inverted)



Live cell time-lapse imaging set-up

- Multi-location 3D-XFP ratio imaging
- Spinning disk, alternatively TIRF or wide-field illumination
- Omicron Laser Box with 405, 445, 488, 515, 561 and 642 nm lasers
- Fast filter-based wavelength switcher (TILL) with 340, 380, 440, 480, 560, 630 nm
- Photo-manipulation unit with all available laser wavelengths for FRAP, photo-conversion etc.
- Focus constant device for stable image recording
- Motorized xy-table for multi-location and tile-image recording
- 2 cooled CMOS cameras (Orca Flash 4.0), 1 ANDOR iXON 897E back illuminated CCD camera (512 x 512 px),
- Temperature control, CO_2 incubator (Tokai Hit)
- Software TILL

(funding by DFG 491b GG to K. Palme and R.N.)

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SD-I-TILL
Objectives

Pos.	Objective	Magnification	DIC	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number	DIC
1	Plan-Apochromat 10x/0,45 420640-9900	10		0.45	air	2	215 Ni	
2	Plan-Apochromat 20x/0,8 420650-9901	20	II	0.8	air	0.55	216 Ni	
3	LD-C-Apochromat 63x/1,15 W Korr UV-VIS-IR 421887-9970	63	III	1.2	H_2O	0.6	218 Ni	
4	α Plan-Apochromat 100x/ 1,46 Oil DIC VIS 420792-9800-720 Ser. Nr. 4903000063	100	III	1.46	oil	0.11	219 Ni	

Additional for exchange:

	EC Plan-Neofluar 2,5x/0,085 420320-9902	2,5	-	0.085	air	8.8	231 LIC	
	LD-LCI Plan-Apochromat 25x/0,8 Imm Corr DIC M27 420852-9870	25	II	0.8	H_2O, gly, oil	0.57	217 Ni	Im Koffer
	Plan-Apochromat 40x/0,95 Ph3 Korr 420661-9970	40	III	0.95	air	0.25	214 Ni	Im Koffer

To SD-I-TILL optical filters

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SD-I-TILL
Optical filters

Filter Pos.	Filterset	Fluorochrome	Filter number
1			-
2	Emissions beam splitter GFP/DsRED DCR 570		
3	Emissions beam splitter 50/50		
4	Bandpass 650/70 Chroma		
5	Bandpass 525/50 Semrock		
6	DCXR 520 CFP/YFP Emissionsteiler	CFP/YFP	

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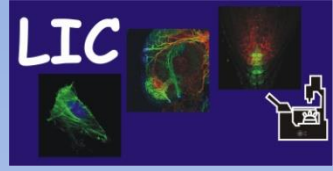

Special microscopes

Biostation I
Nikon Biostation IM

Dedicated long-time live cell time-lapse imaging set-up for

- Multi-location 2-channel fluorescence imaging
- Phase contrast imaging
- Multi-location and tile image recording
- Magnification 10 x, 20x, 40x and 80x
- Filters for UV (Hoechst, DAPI), CYAN (CFP), BLUE (GFP, Alexa 488), BLUE II (YFP), GREEN (DsRED, rhodamine)
- 37°C, 5 % CO_2 incubation chamber
- Maximal detection area 6 mm x 6 mm flow chamber
- IBIDI flow slides (with no flow) or open glass bottom or special IBIDI petri dishes
- Up to 4 independent experiment conditions simultaneously

(funding by industry collaboration to R.N.)

To Biostation I & II optical filters

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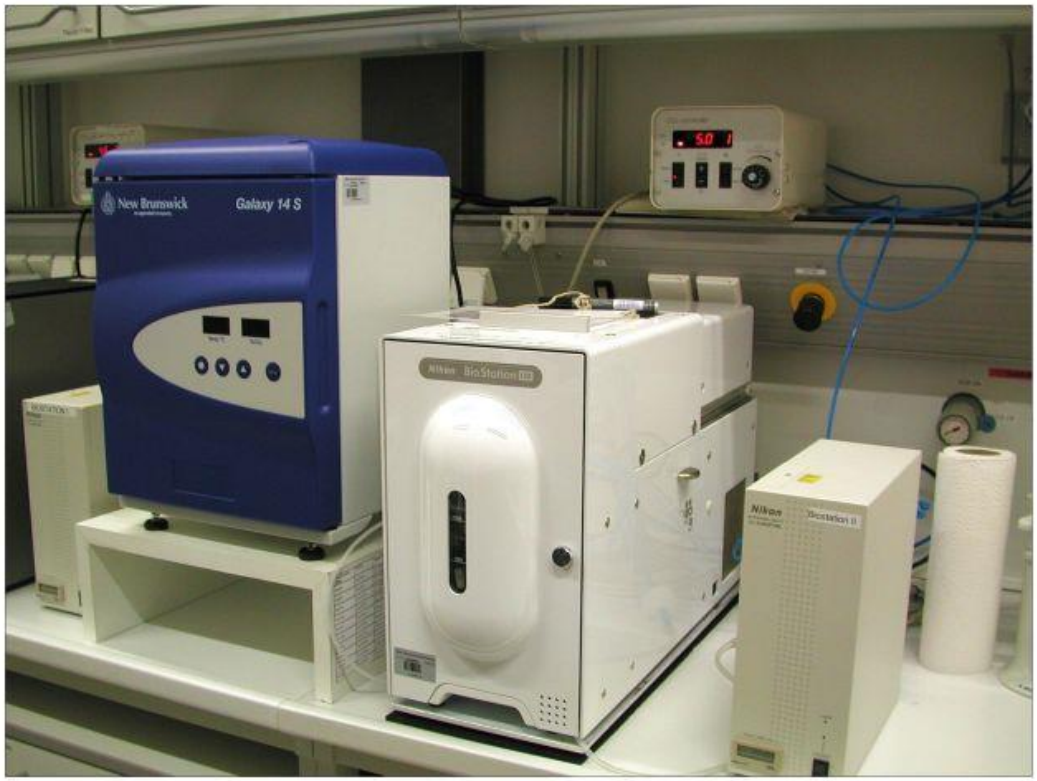
Biostation II

Nikon Biostation IM with perfusion chamber



Dedicated long-time live cell time-lapse imaging set-up for

- Multi-location 2-channel fluorescence imaging
- Phase contrast imaging
- Multi-location and tile image recording
- Magnification 10 x, 20x, 40x and 80x
- Filters for UV (Hoechst, DAPI), CYAN (CFP), BLUE (GFP, Alexa 488), BLUE II (YFP), GREEN (DsRED, rhodamine)
- 37°C, 5 % CO_2 incubation chamber
- Maximal detection area 6 mm x 6 mm
- Add on for IBIDI flow slides or open glass bottom or special IBIDI petri dishes
- Up to 4 independent experiment conditions simultaneously

(funding by Ralf Baumeister group)

To Biostation I & II optical filters

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Biostation I & II
Optical filters

Internal number	Filterset	Filter			Dye
#128	F46-001	BP 436/20	BS 455 LP	BS 455 LP	CFP
#130	F46-002	BP 470/40	BS 495 LP	BS 495 LP	eGFP (FITC/Cy2)
#129	F46-003	BP 500/20	BS 515 LP	BS 515 LP	YFP
#131	F46-004	BP 545/25	BS 565 LP	BS 565 LP	Cy3
#126	F36-525	BP 472/30	BS 495	BS 495	eGFP
#127	F20-403	BP 546/12	BS DCLP 560	BS DCLP 560	Rhodamine/DsRed
#242	F36-508	BP 562/40	BS 593	BS 641/75	mCherry
#243	F36-508	BP 562/40	BS 593	BS 641/75	mCherry

Objective	Pixel (XxY)	Frame Size	Pixel size [µm]
20x	1600x1200	353x265 µm	4.55
40x	1600x1200	176x133 µm	9.1
80x	1600x1200	88x66 µm	18.2

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InCuCyte FLR
Essen Instrument microscope inside incubator

InCuCyte FLR (Essen Instruments) for long time-lapse up to 14 days

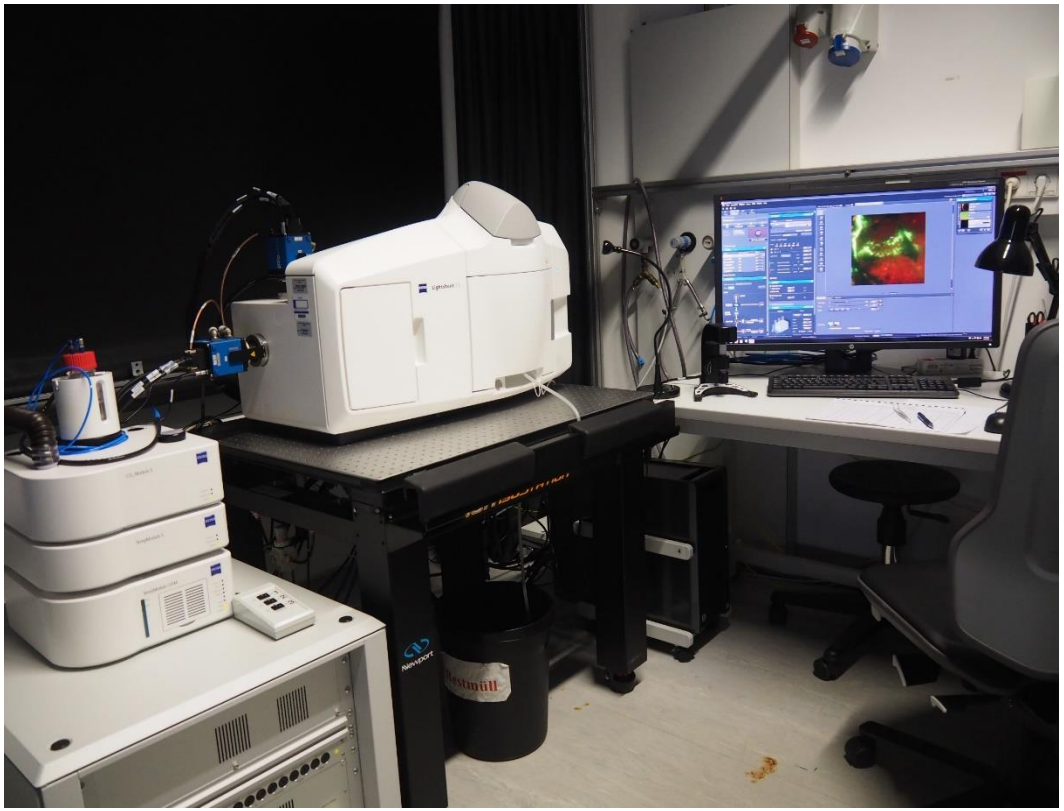
- Fluorescence and phase contrast microscope inside an incubator, takes many different culture flasks.
- Allows long time observation of your cultures.
- The ideal tool for growth curve measurements, confluence and transfection rate measurements.
- Two channel recording (**480 nm excitation and phase contrast**)

- Contact the LIC personal for further details of usage.

- (funding by Bioss Exc 294)

Lightsheet Z1

Zeiss Z.1 Lightsheet microscope



Light Sheet Fluorescence Microscopy (LSFM) for multiview imaging of large specimens

- Laser lines: 405, 445, 488, 514, 561, 638 nm
- Camera: PCO.edge 5.5 with sCMOS sensor (5.5 MP, 2560 x 2160)
- Pecon® CO_2 Module S (CO_2 control unit)
- Pecon® TempModule LSFM (temperature control unit)
- Software Zen 2014 SP1 Black (ZEISS)

To Lightsheet optical filters and Analysis PC

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Lightsheet
Optical filters

Notch Filterwheel

Filter Position	Filtersets	Fluorophores	Filter number
1	LBF 405/488/561	DAPI/GFP/Cy3	(404900-9100-000)
2	LBF 405/488/640	DAPI/GFP/Cy5	(404900-9102-000)
3	LBF 445/515/640		(404900-9104-000)
4	LBF 405/488/561/640	DAPI/GFP/Cy3/Cy5	(404900-9101-000)

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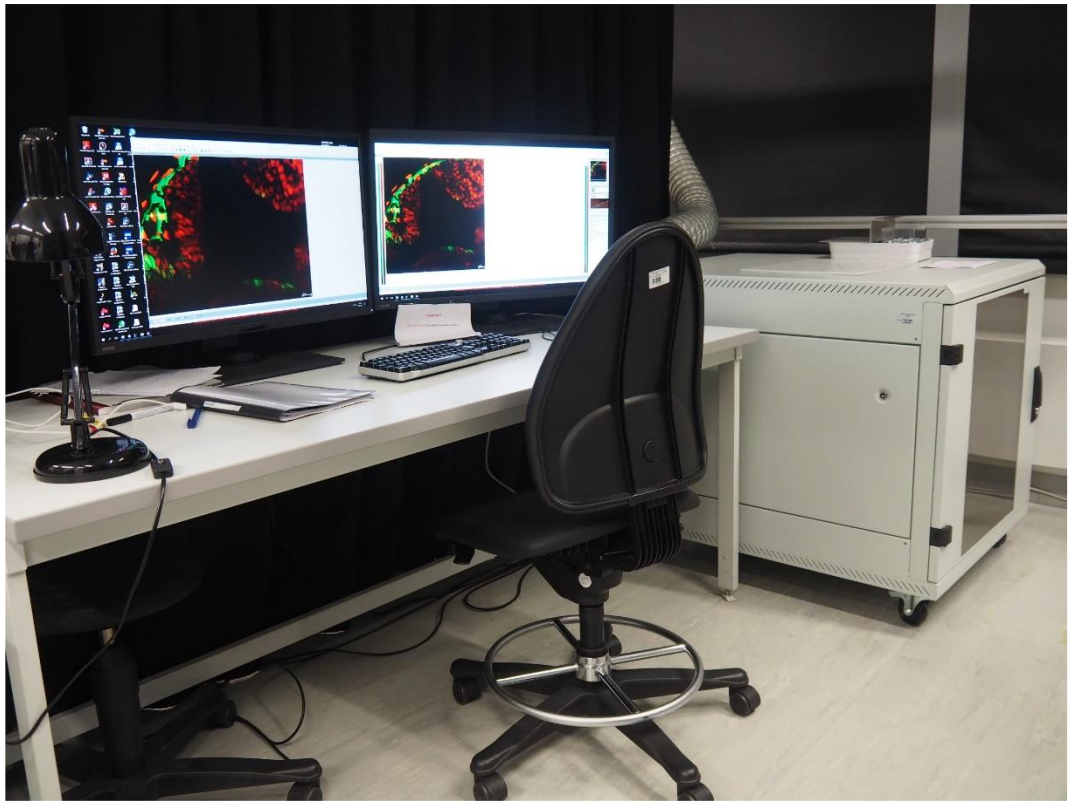
Lightsheet
LightZ1-Ana



Lightsheet Z1 analysis PC

- Arivis Vision4D
  → for more software information see „Software programs“
- 110 TB storage capacity (RAID5)
- GPU 1: Nvidia P6000 (24 GB VRAM),
  GPU 2: Nvidia 1080Ti (11 GB VRAM)
- CPU: 2x E5-2637 v4 4-core
- RAM: 256 GB ECC

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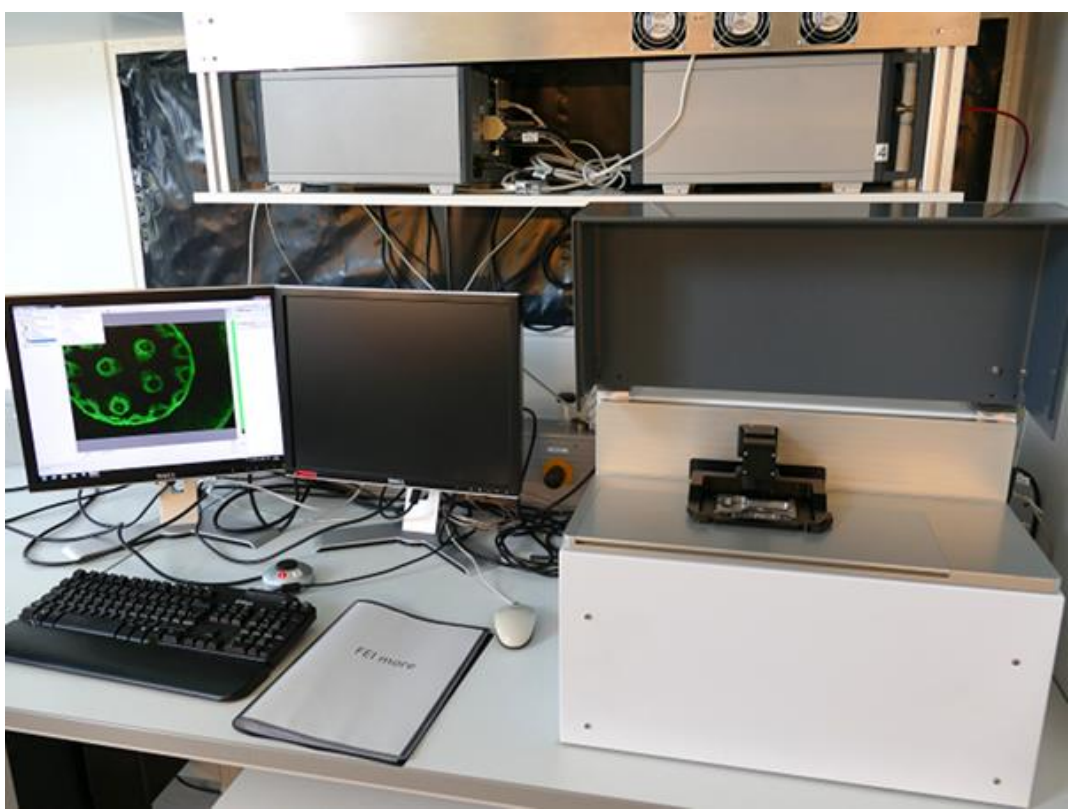
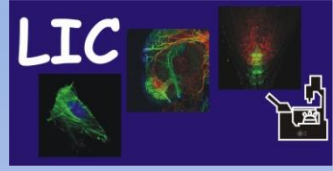
Screen-TILL

TILL FEI-More screening microscope



Medium throughput screening microscope, very fast and stable inverted wide-field microscope with

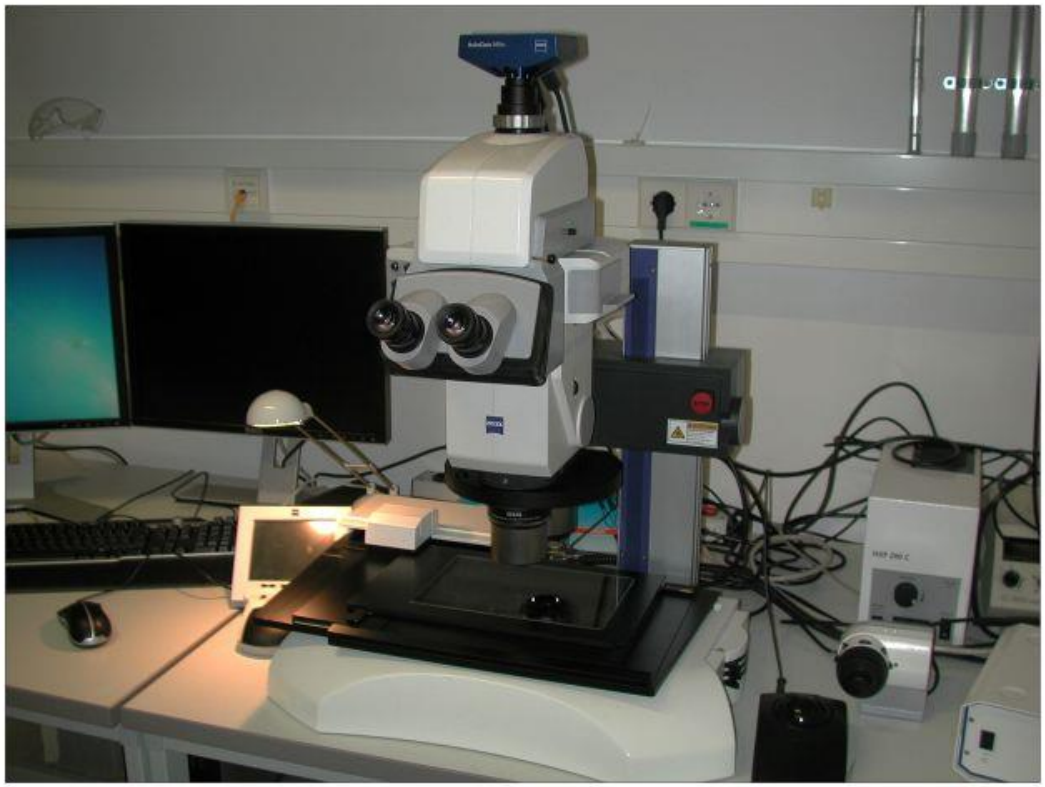
- Motorized xy-stage
- Camera: AVT Stringray F-145B, CCD Progressive Sensor Type
  - 1388x1038 px
  - Pixel size: 6.45 µm x 6.45 µm
  - Max. 30 fps
  - 14 bit dynamic range
  - Peak quantum efficiency > 55%
- Light source: LED, Polychrome V
- Objectives
  - Olympus UPlanSApo 10x NA0.4, air, 3.1 mm Working Distance
  - Olympus UPlanPLN 40x NA0.75, air, 0.51 mm Working Distance
- Filter: Cy5, mCherry, DsRED, Cy3, GFP, CFP
- Software Live Acquisition 2.5



Fluorescence stereo microscopes

AxioZoom

Zeiss AxioZoom V16 with B/W and color camera



Fluorescence stereo microscope with

- AxioCam MRm b/w (1388x1040) and AxioCam 105 color (2560x1920)
- Fluorescence excitation
- Transmitted light and/or reflected light (BF,BF+,RC,DF)
- Motorized xy-table for multi-location and tile-image recording
- PlanNeoFluar Z 1x/0,25 FWD 53,1 mm
- PlanNeoFluar Z 2,3x/0,57 FWD 10,6 mm
- Filter for DAPI, Alexa488, mRFP

(grant of R.N.)

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome	Filter number
1	FSet 49 G365 FT 395 BP 445/50	DAPI, Hoechst	278
2	FSet 38 HE BP 470/40 FT 495 BP 525/50	GFP, Alexa488	279
3	FSet 63 HE BP 572/25 FT 590 BP 629/62	mRFP	280

Objective	Magnification	Num. Aperture	Imm. Medium	Working distance (mm)	Internal number
Plan Neo Fluar	1	0.25		53.1	
Plan Neo Fluar	2.3	0.57		10.6	

Stereo 2
Leica MZ FL III with B/W camera

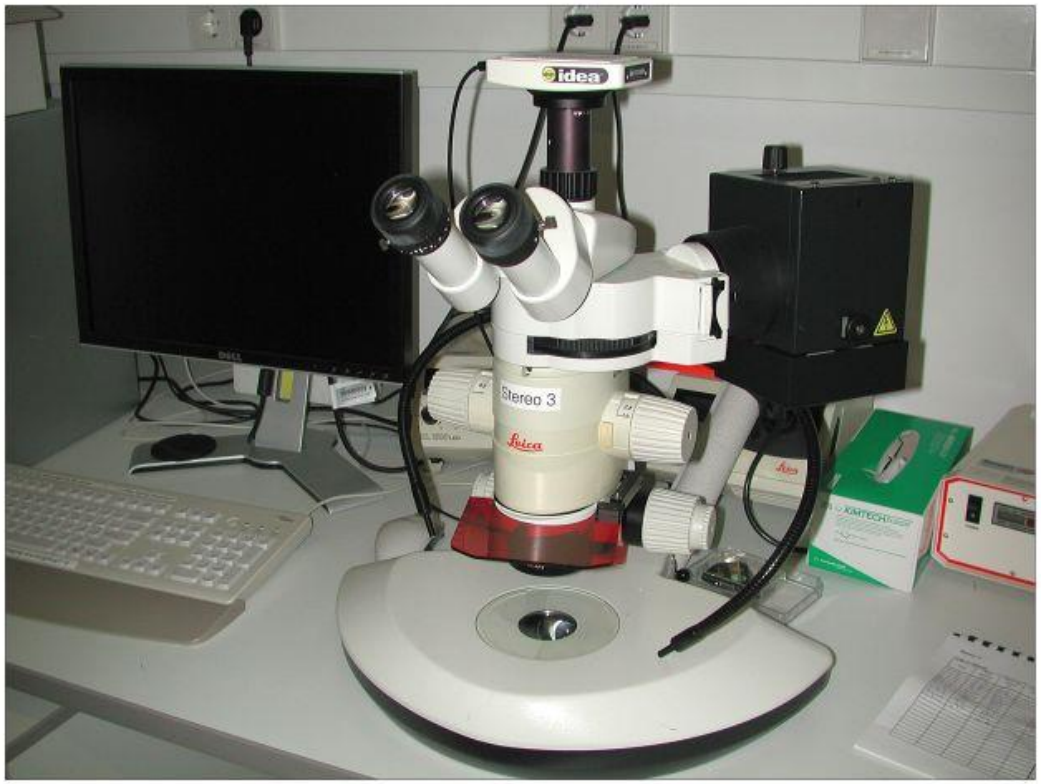
Fluorescence stereo microscope with

- Fluorescence excitation
- Transmitted and/or reflected light
- Objective 1.0
- Zoom 0.8 - 10
- Timelapse option
- CO_2 available at the microscope
- Filtersets for FITC, Alexa488, Cy2, Alexa546, DsRed
- Zeiss ICC color camera
- Software ZEN light

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome
1	FSet 41-001	FITC, Alexa488, Cy2
2	GFP longpass	GFP
3	G green fluorescence	Alexa546, DsRed

Stereo 3
Leica MZ FL III with color camera



Fluorescence stereo microscope with

- Fluorescence excitation
- Transmitted and/or reflected light
- Objective 1.0
- Zoom 0.8 - 10
- Image recording software VISIVIEW
- time-lapse option
- IDEA color camera (1300x1000 px)

(SFB592 Z2 funding)

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome
1	FSet UV fluorescence	DAPi
2	Fset green fluorescence	Alexa546, DsRed
3	Fset GFP 3 plant	GFP

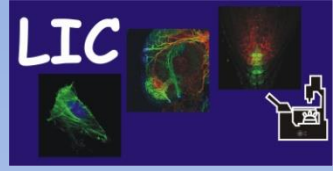
Stereo 4
Leica M165 FC with B/W camera

Fluorescence stereo microscope with

- Fluorescence excitation
- Transmitted and/or reflected light
- Objective 1.0
- Zoom 0.73 - 12
- CoolSNAP fx CCD camera (B/W) (1300x1030 px)
- Software Roper RS

Filters for direct visualization by eye:

Filter Pos.	Filterset	Fluorochrome
1	TL	TL
2	Filtersatz GFP2 Ultra	GFP
3	Filtersatz dsRED Ultra	DsRED



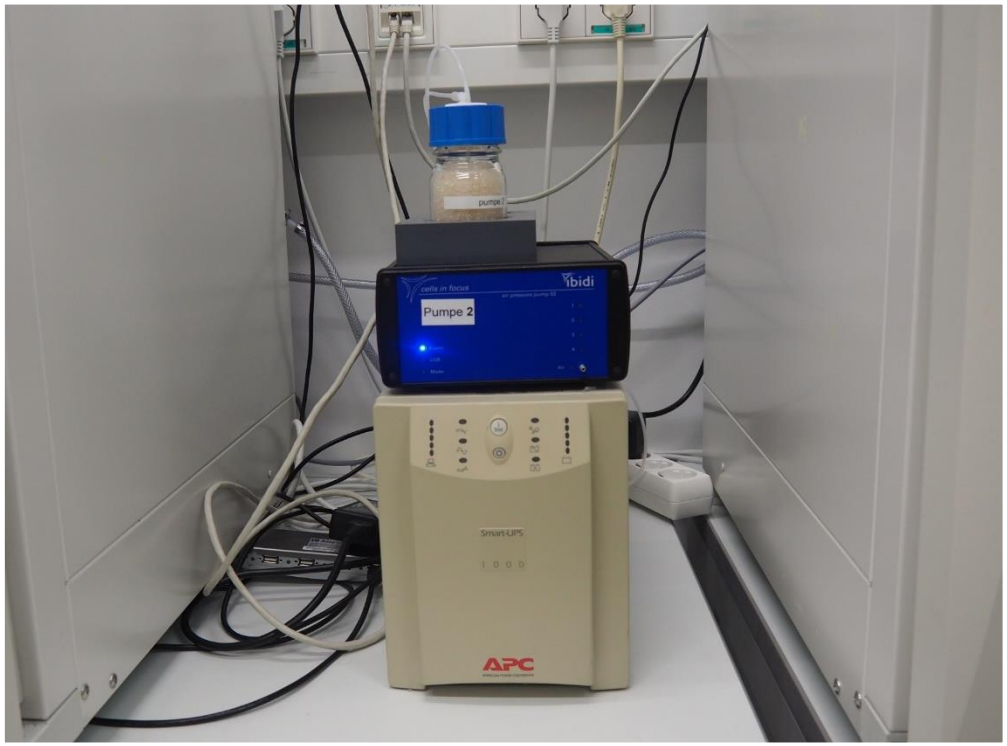
Special Setups

Osmomat 3000
Gonotec Freezing Point Osmometer

The Osmomat 3000 determines the total osmolality of aqueous solutions.

- The Osmomat 3000 determines the total osmolality of aqueous solutions. The instrument requires very small sample volumes (15 µl / 50 µl) and can thus be applied for extreme measuring tasks. Its rapidity allows serial measurements in a very short time.
- Resolution: 1 mOsmol/kg H_2O
- Range: 0 - 3000 mOsmol/kg H_2O

Ibidi Pump System
ibidi Pump



Ideal simulation of various physiological conditions

- Defined shear stress in long-term cell culture (e.g., endothelial cells, kidney, or biofilm)
- Live cell imaging and immunofluorescence for analyzing shear stress response
- Mimicking shear stress conditions in microcapillary, venous, and arterial flow
- Rolling and adhesion of suspended cells on substrates
- Stop flow experiments
- 3D cell culture: interstitial flow

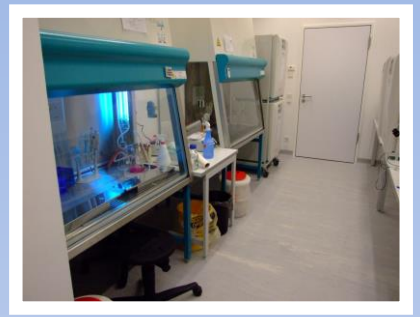
Refractometer

A.KRÜSS Optronic Refractometer

Refractometer for refractive index measurements

Can be used for embedding media or experimental solution

Tissue Culture



Tissue Culture

Lab Space

Wet Lab I

Wet Lab III

Wet Lab II

Lab Space
Tissue Culture

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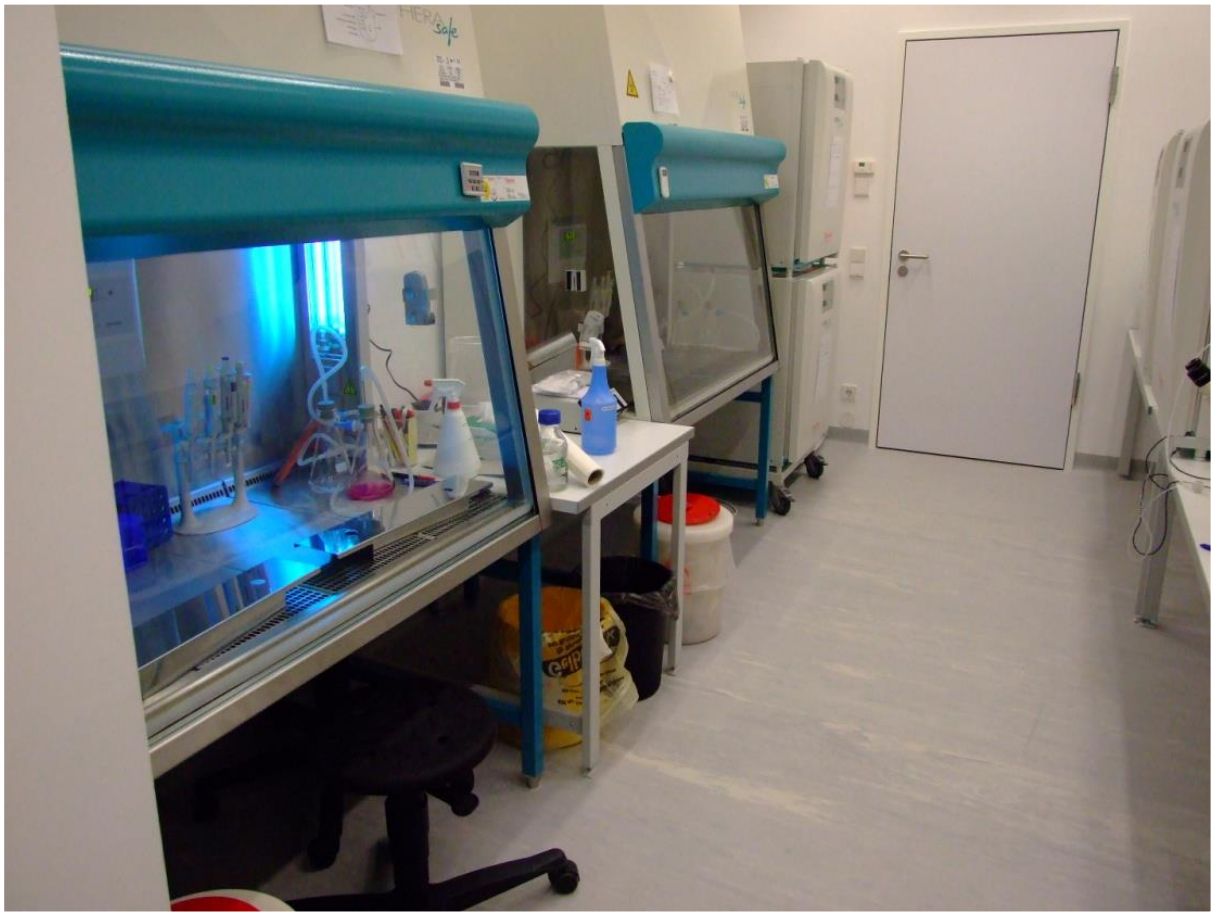
Lab Space
Tissue Culture



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Lab Space
Wet Lab I

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Lab Space
Wet Lab II

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Lab Space
Wet Lab III

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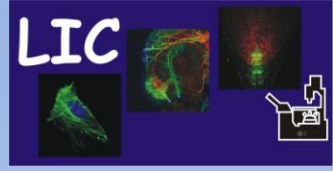

End

We hope you enjoyed the tour.

The LIC Team

We are looking forward to help you with your research.