

**Structured Illumination
Super-Resolution Modul
SIM Basic & SpinDisk SIM Series**



2022 V1

For customized projects please Contact us:

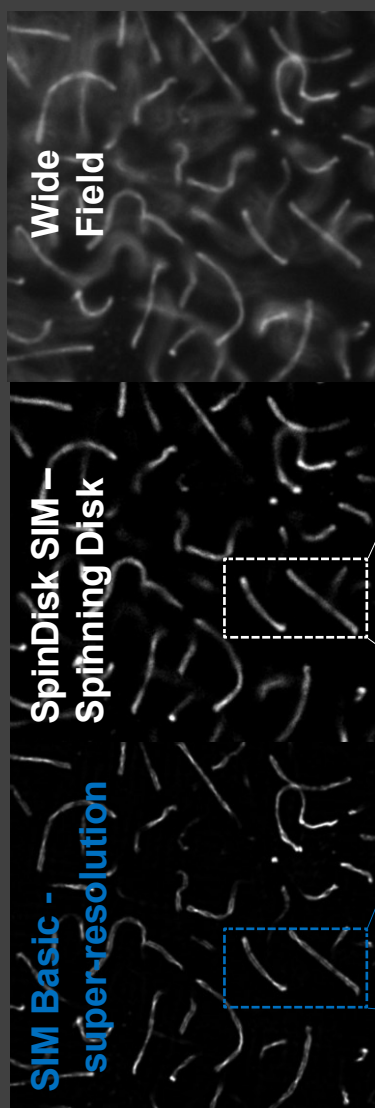
info@simtrum.com

Introduction

SIM Basic - the super-resolution microscopy system that addresses deep biological questions with ease.

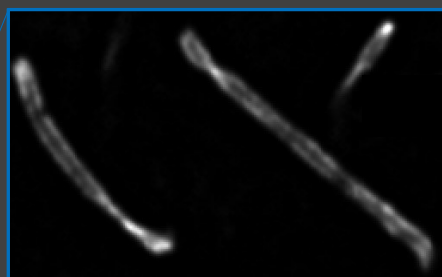
Our goal is to make super-resolution accessible to all scientists to advance their research. For this reason, we developed SIM Basic, the first super-resolution module that is compatible with any existing upright or inverted microscope and can be used like a confocal microscope to facilitate access to super-resolved deep data of biological samples.

Three imaging modalities in one setup



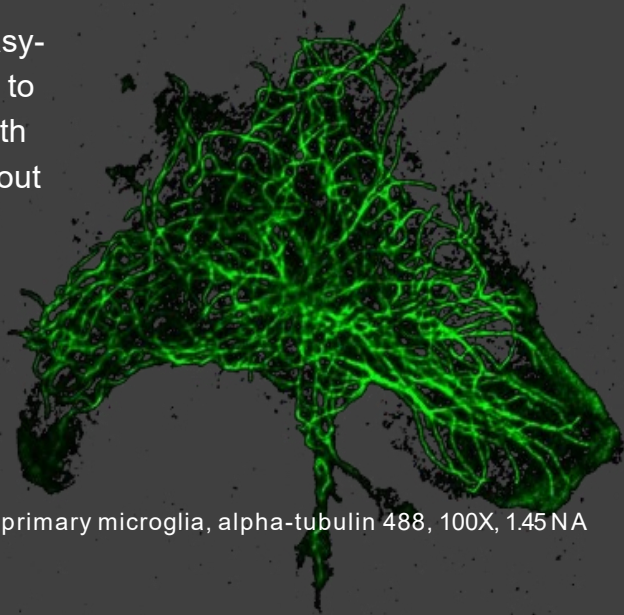
By choosing SIM Basic technology, you will be able to create a modular, expandable, and highly performant system, resulting in the creation of a truly enabling technology.

The SIM Basic can be used both with SpinDisk SIM confocal system as well as independently as a Stand-Alone system for any microscope that has a camera port.

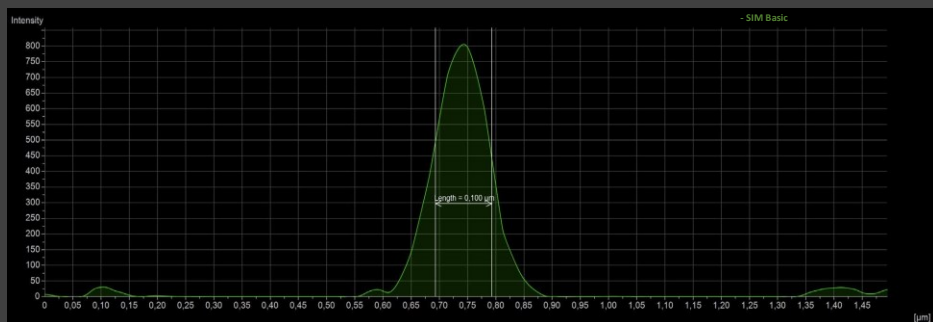
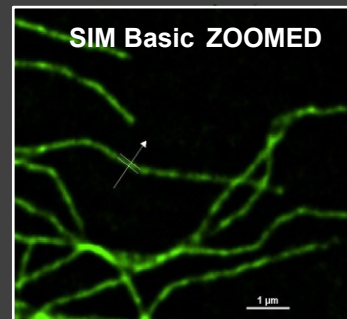
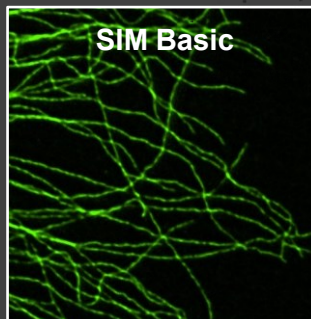
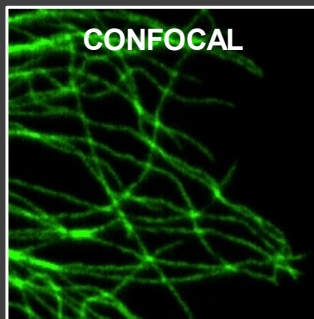


A single click to double confocal resolution

Through the using of a multi-spot structured illumination system, SIM Basic provides reliable, easy-to-use and affordable solutions to study sub-cellular structures with a XY resolution of **100 nm** without requiring any special sample preparation protocol.



Mouse primary microglia, alpha-tubulin 488, 100X, 1.45 NA

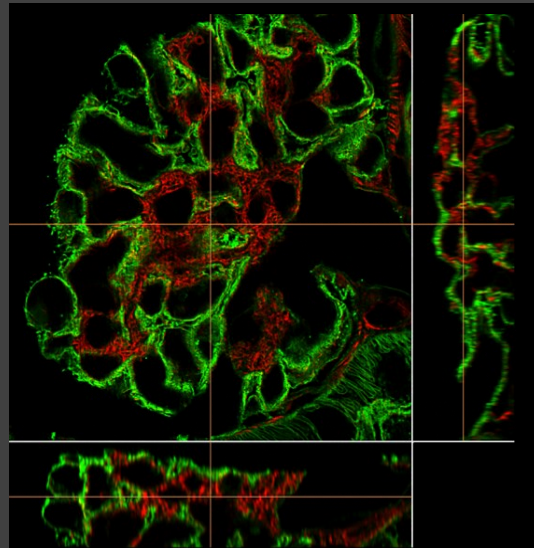
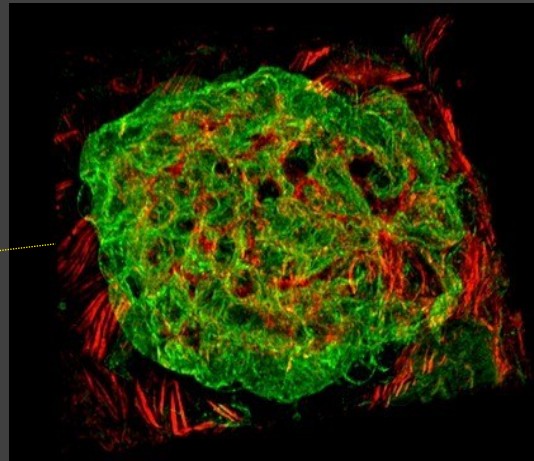
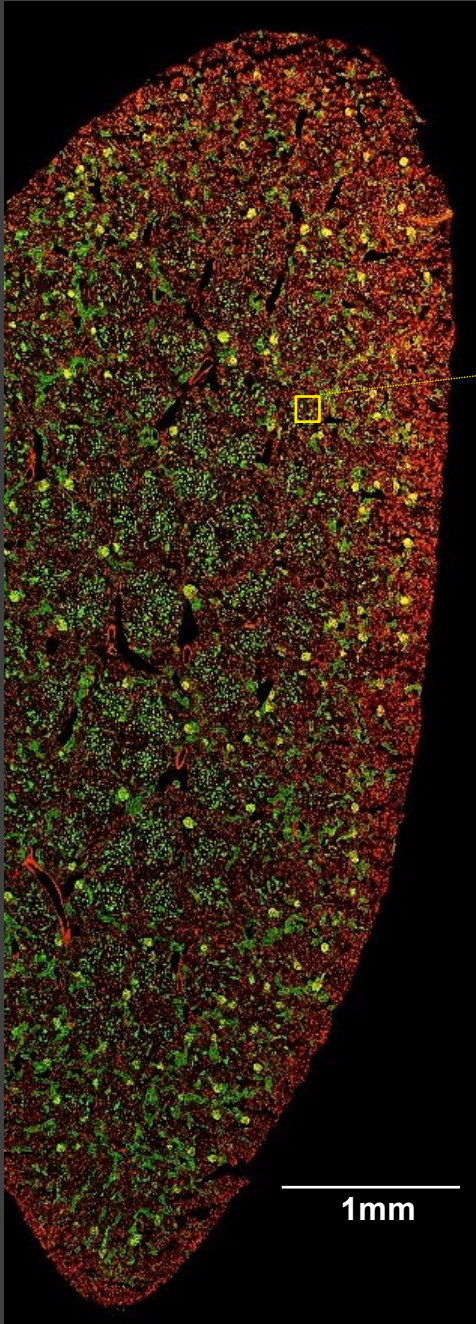


Mouse primary microglia, alpha-tubulin 488, 100X, 1.45NA, 100 nm resolution

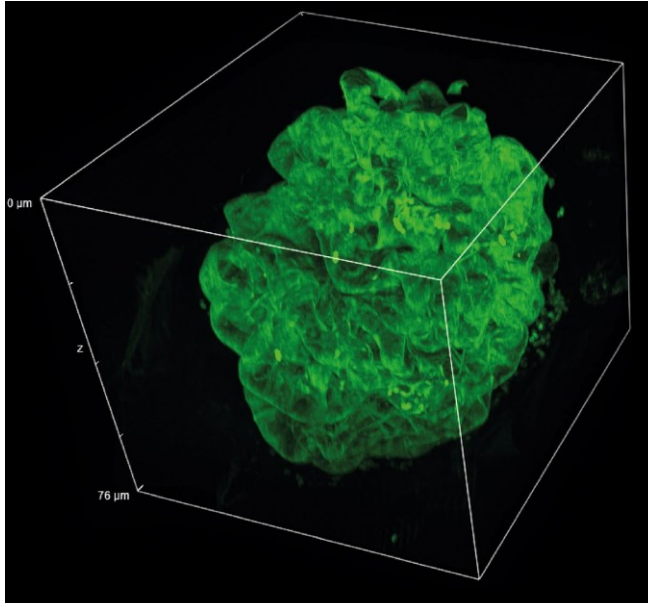
Three methods are available for obtaining deep data

Mouse kidney section. Wheat Germ Agglutinin(WGA, green) and phalloidin (red) markers, 25 Sil, 105 NA acquired with SpinDisk SIM Spinning disk system.

With SIM Basic, large confocal acquisitions can be enhanced by adding a deeper level of detail thanks to [super-resolved optical sectioning with Z resolution of up to 300 nm](#).



3D volume views of super-resolved glomeruli, 60X, 1.45 NA. Axial resolution is appreciable through orthogonal views.



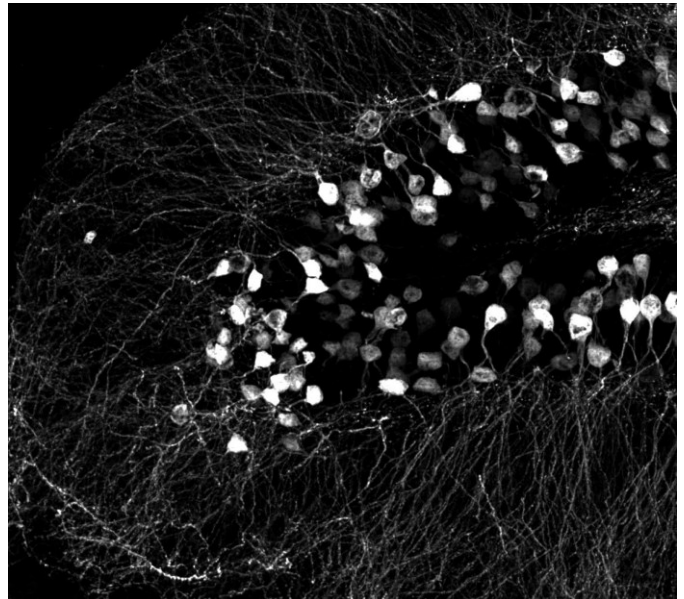
Cleared mouse kidney section stained with Alexa Fluor 488 labeling blood vessels.

Z stack 76 μ m and 3D rendering.

It can be used with samples with thicknesses comparable to those used in confocal microscopy, giving super-resolved data over a **depth of 50 μ m**.

In this way, native heterogeneous complex samples can be investigated more thoroughly using routine preparation protocols.

A two-fold increase in spatial resolution can be obtained using both **high magnification (60X, 100X)** and **low magnification (20X, 40X) objectives**, thereby enabling the study of complex 3D models such as tissues, spheroids, organoids, and small organisms.

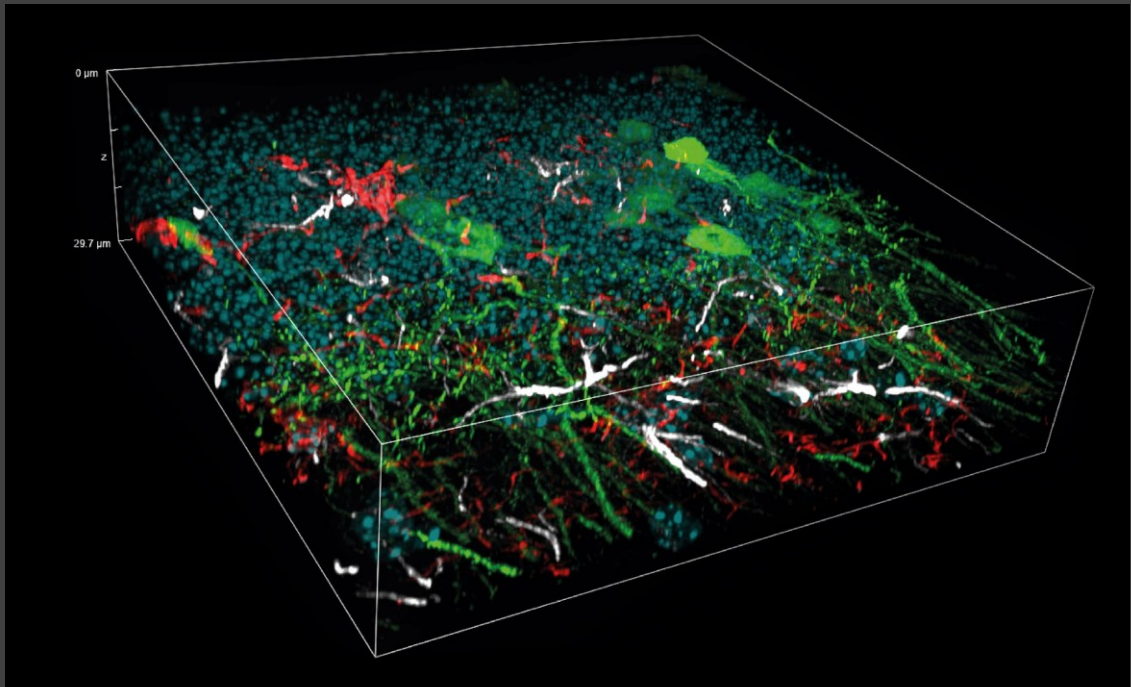


Hippocampal coronal slice from Thy1-GFP mouse brain; 20X dry 0.75 NA.

At any moment, you can find out more

In order to provide maximum flexibility in fluorophore choice and optimal multichannel imaging without spectral overlap, we have designed the instrument to operate across the **entire wavelength spectrum from 400 to 750 nm.**

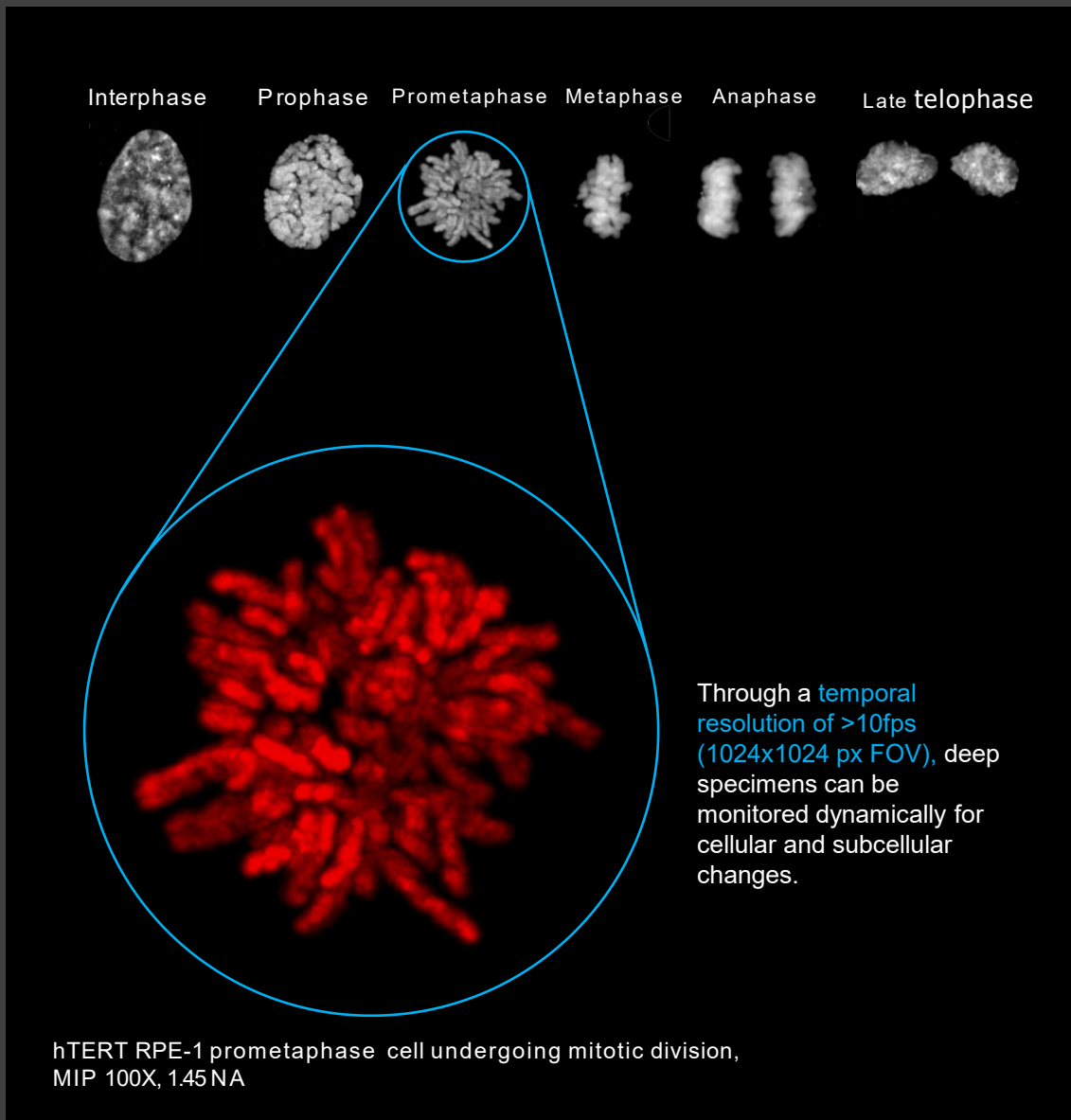
By utilizing the dual camera function of the SpinDisk SIM spinning disk system, the SIM Basic can simultaneously acquire multiple channels, resulting in **faster acquisition times.**



3D volume view of a mouse brain tissue section showing neurons with dendritic spines (green), microglia (red), astrocytes (white) and DNA (cyan). Total volume acquired: 30 μm . 60X, oil 1.4 NA

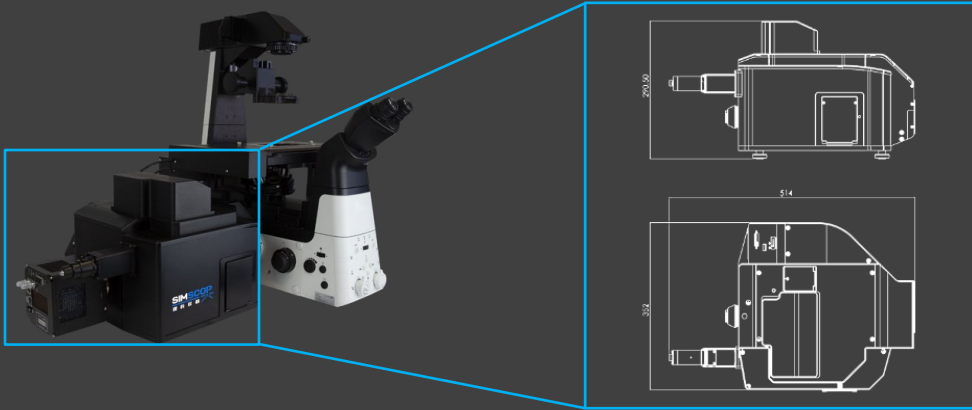
The SIM Basic high-speed acquisition modality allows for the capture of meaningful data at high resolution while **minimizing light exposure** and therefore

The risk of photo-toxicity. A delicate specimen can be explored using this functionality.

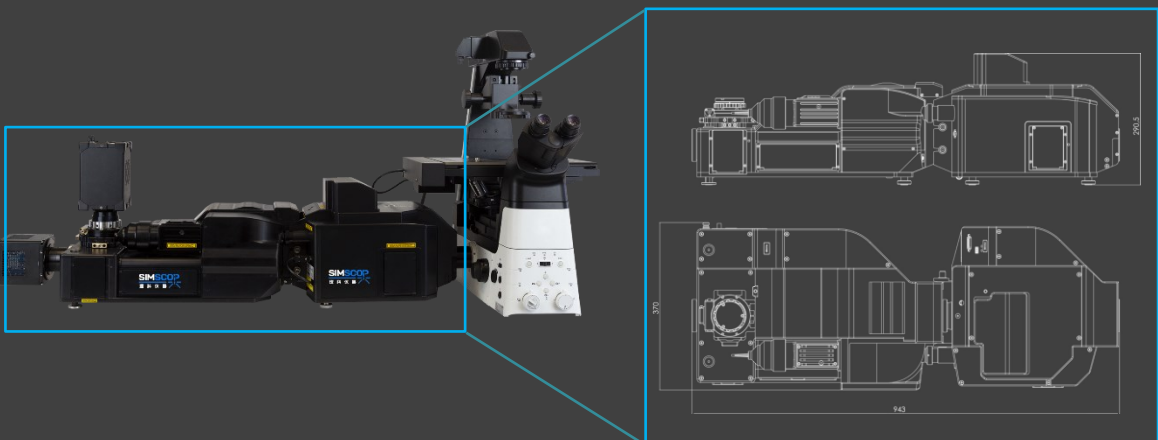


Evolution through compatibility

SIM Basic Stand-alone



Combination with SpinDisk SIM



Specifications

Parameters	SIM Basic	SpinDisk SIM
FOV	1024 x 1024 pixel (66 x 66 μm 100X 333 x 333 μm 20X)	1024 x 1024pixel (66 x 66 μm 100X 333 x 333 μm 20X)
Resolution	Lateral Resolution (FWHM): ~100 nm (100X NA 1.45) Axial Resolution (FWHM): ~300 nm (100X NA 1.45)	Lateral Resolution (FWHM): ~100 nm (100X NA 1.45) Axial Resolution (FWHM): ~300 nm (100X NA 1.45)
DeepSIM Acquisition Speed	13fps (1024 x 1024 px)	13fps (1024 x 1024 px)
Laser Spectral Range	Excitation: 400-750 nm; emission: 400-850 nm	Excitation: 400-750 nm; emission: 400-850 nm
Objective Specifications	-from 20X to 100X magnification range -high numerical aperture (NA) -plan apochromat correction	-from 20X to 100X magnification range -high numerical aperture (NA) -plan apochromat correction
Camera Compatibility	Any triggerable camera having 6.5 μm pixel size	Any triggerable camera having 6.5 μm pixel size
Multi Cameras Option	Single camera	Dual camera option available*
Spinning Disk Upgrade	Stand-alone solution A	Add-on compatible with SpinDisk Advance
Imaging Modalities	Super-resolution Widefield	Super-resolution Confocal spinning disk Widefield
Upgradable Microscope Configuration	Upright and inverted configurations	Inverted configuration
Software	μ Manager /VisiView® / NIS Elements	μ Manager /VisiView® / NIS Elements
Installation Conditions	Temperature 23 \pm 5°C, Humidity 70% RH or less	Temperature 23 \pm 5°C, Humidity 70% RH or less
Weight	50.7 lbs 23Kg	44 lbs 20Kg
Dimensions	13.8 (w) x 20.2 (L) x 11.4 (h) inches 352.0 (w) 514.0 (L) x 290.5 (h) mm	14.0 (w) x 17.1 (L) x 11.4 (h) inches 356.0 (w) x 435.0 (L) x 290.5 (h) mm

* Software integration in progress