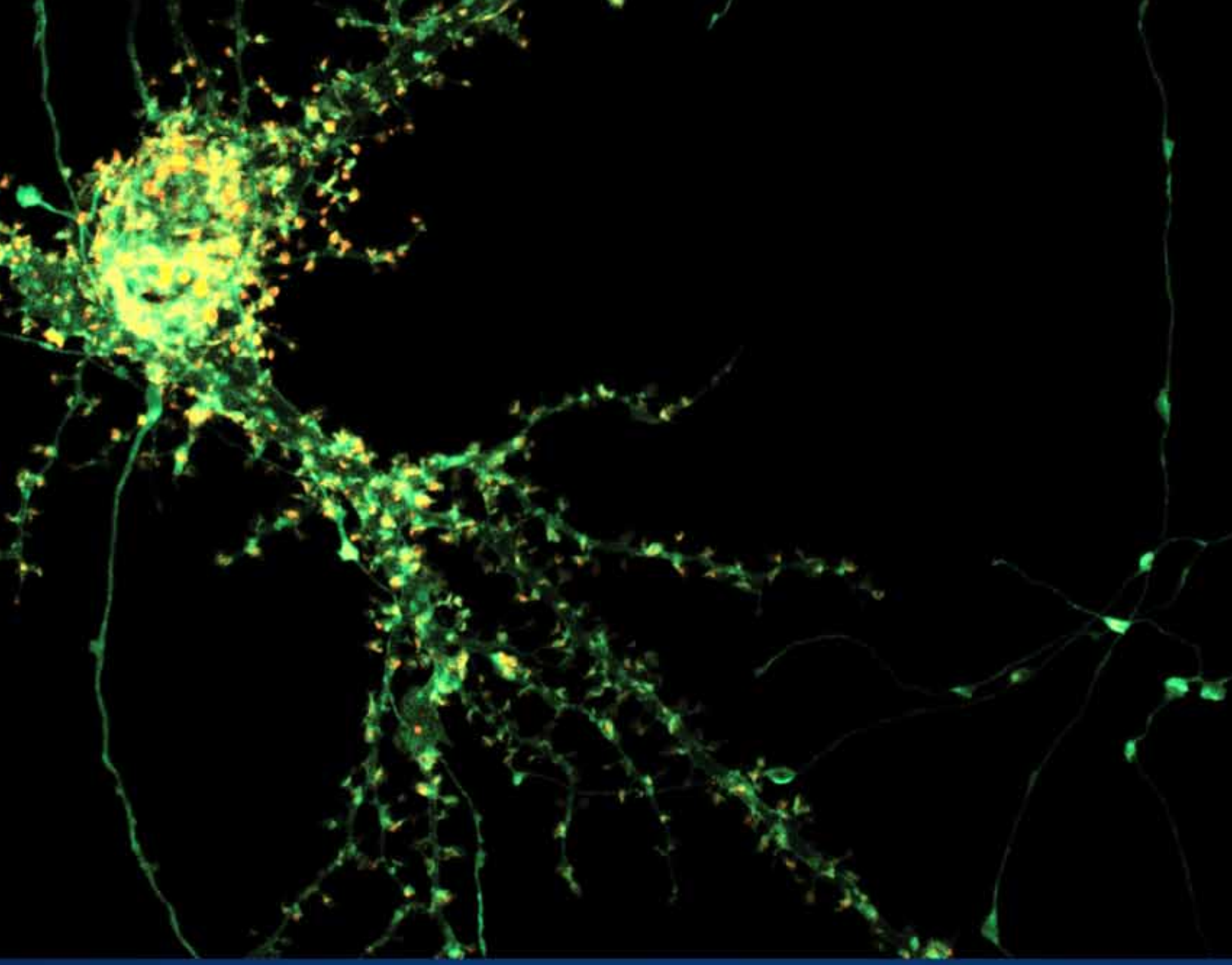


Olympus **OPTICAL EXCELLENCE.**

The power of **ANDOR REVOLUTION.**

Revolution XD Spinning Disk Confocal

OLYMPUS®

Your Vision, Our Future

iXon Ultra-Sensitive EMCCD Technology

- Detection of extremely weak signals with optimal S/N and high resolution
- Significantly reduced photobleaching and phototoxicity
- 1000 x 1000 @ 30 fps to
- 128 x 128 @ >500 fps

Microscope Platform

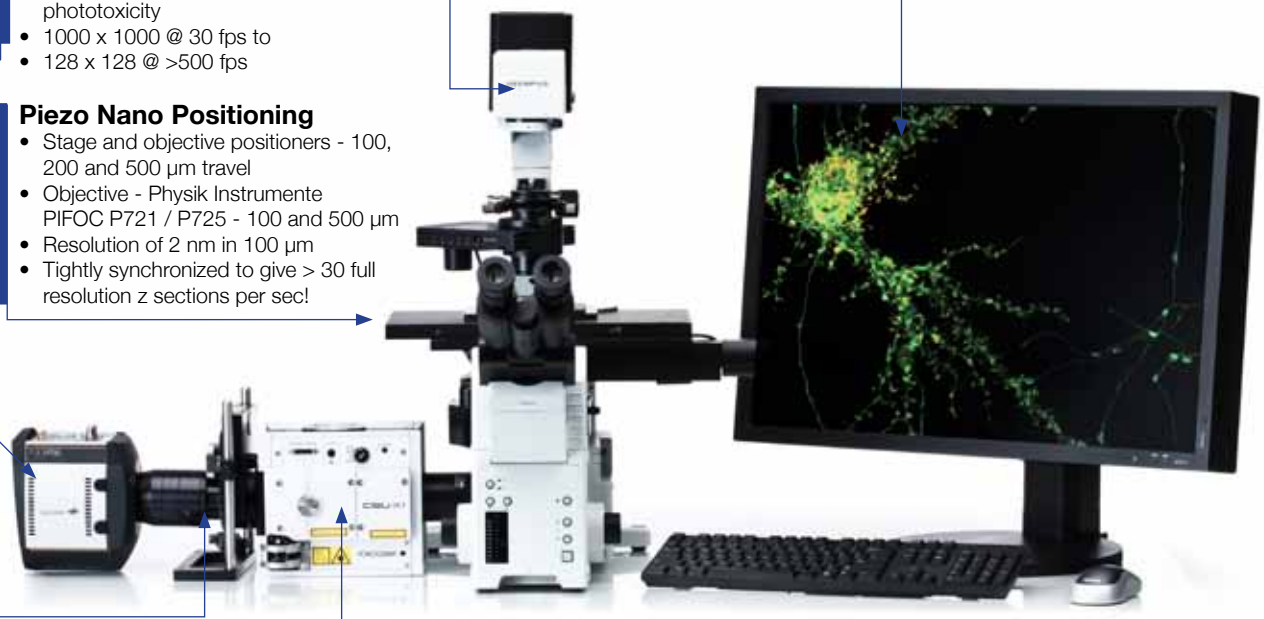
- Olympus IX81® with ZDC2 Zero Drift Compensation capability.
- High end optics for excellence in live cell research.

MetaMorph® for Olympus

- Proven performance for image capture, display and analysis
- Acquisition and device control
- Image display and processing
- Image analysis

Piezo Nano Positioning

- Stage and objective positioners - 100, 200 and 500 µm travel
- Objective - Physik Instrumente PIFOC P721 / P725 - 100 and 500 µm
- Resolution of 2 nm in 100 µm
- Tightly synchronized to give > 30 full resolution z sections per sec!



Emission Discrimination

- Multi position filter wheel
- Dual port camera adapter
- Two, three or four channel field splitter

Laser Confocal Spinning Disk

- Ideal for high contrast confocal imaging of fluorescently labelled live cells
- Microlens disk enhanced laser throughput
- Andor-enhanced with Semrock dichroics and apochromat projection optics.

Why Choose Olympus and Andor?

When it comes to live cell imaging, you need the best optics and a system with tight opto-electronic integration to capture those dynamic events. Olympus and Andor have built reputations for optical excellence and flexible system designs to meet the most challenging research needs. Tight cooperation between Olympus and Andor means outstanding support and true partnership for your research.

OLYMPUS EXCLUSIVE: 30X AND 60X SILICONE OBJECTIVES OPTIMIZED FOR LIVE CELL IMAGING

Minimizing spherical aberration and delivering higher resolution at greater depths.

Features

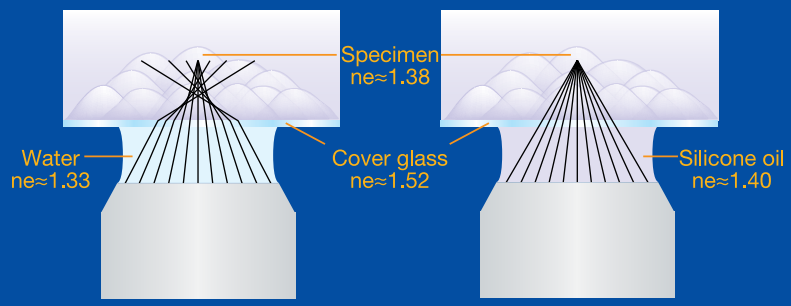
- Improved optical performance for range of applications including live-cell confocal and differential interference contrast (DIC)
- 30x Si objective provides high N.A. allowing for macro observation with high resolution and optical sectioning.
- Ideal for long-term time-lapse imaging
- Enhanced image resolution and contrast and fluorescence performance by adjusting correction collar
- A large numerical aperture and wide-ranging transmission capability from UV to IR.

Model	Magnification	N.A.	W.D. (mm)	Immersion media	Field of view	Cover glass correction	Temp.	DIC Observations
UPLSAPO60XS	60X	1.3	0.3	Silicone oil (ne=1.406)	22	0.15-0.19mm	23-37°C	Yes
UPLSAPO30XS	30X	1.05	0.8	Silicone oil (ne=1.406)	22	0.13-0.19mm	23-37°C	Yes

UPLSAPO30XS & UPLSAPO60XS - SILICONE IMMERSION OBJECTIVES FOR LIVE IMAGING

These immersion objectives are designed exclusively for use with silicone oil, which has a refractive index even closer to live cells than that of water. Time-lapse observations become more reliable and less elaborate because silicone oil does not dry at 37˚C and its refractive index remains constant. These objectives also offer a comprehensive solution for both macro and deep-tissue observation in the fields of generative and regenerative science.

Refractive Index is Important with Live Cell Observation



Water immersion objective:
When working with a water immersion objective, the difference between the refractive index of the sample and water results in spherical aberration in deep tissue, causing resolution to deteriorate and fluorescence to become dim.

Silicone immersion objective:
When working with a silicone immersion objective, the difference between the refractive index of the sample and silicone oil is minimal. So it achieves brighter fluorescence images with higher resolution for deep tissue.

Silicone Immersion Oil
SIL300CS-30SC
Refractive index: ne=1.406, 23°C
Net: 30 ml
Low autofluorescence

DIVERSE COMPATIBILITY MICROSCOPES

IX81® ZDC2, IX71, BX61®, BX61WI and BX63

Diverse compatibility

Features

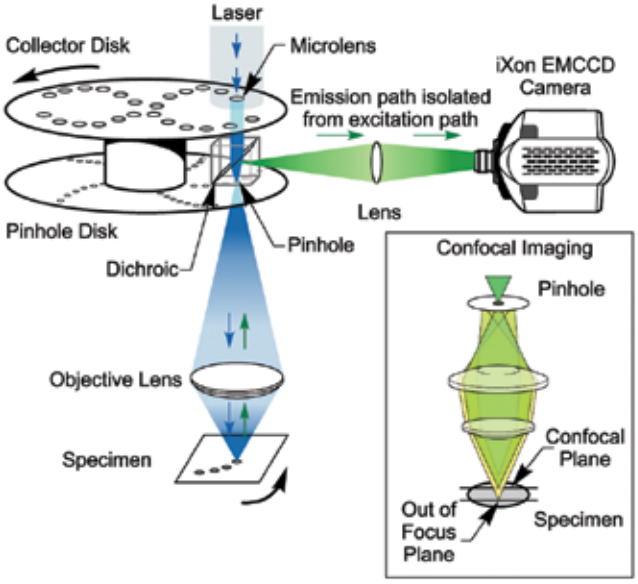
- Active high speed focus compensation support
- Control microscope motorization
- Vibration isolation tables
- Stage top and Cage incubators
- Options for temperature, humidity and CO_2 regulation
- Compatible with manual and fully motorized stands even the Olympus Up/Down Microscope.

MICROSCOPY TECHNIQUES

Confocal Dual Spinning Disk

When Speed Matters,
a Superior Choice for Live Cell Imaging

- Spinning disk confocal is ideal when laser scanning confocal speeds are insufficient
- Highly flexible laser combiner allows for the use of up to 6 lasers. Working with Andor, lasers may be added or exchanged to accommodate user needs.
- Optical train customized to eliminate internal reflections, hence minimizing background signal.
- Precision mounting system for optical train to assure optimum alignment and flatness of field for inverted and upright microscopes.
- Tight synchronization of Andor laser combiner with Andor cameras to maximize imaging conditions for speed and long time-course studies
- Highly configurable acquisition through Metamorph® software.
- High frame rates plus piezo Z capability make the Revolution XD a great solution for acquiring live multi-color 3D volumes over time.



Microscopy Applications

Revolution components and systems benefit from common features across applications. State of the art performance, flexible component-oriented supply and an open-minded approach to systems and technically demanding solutions.

Key Applications

- Cell Motility
- Live Cell Confocal
- FRET Imaging
- Ion Signalling
- Fluorescent Proteins
- Single Molecule
- Comet Assay
- FISH
- Immunofluorescence
- Bio/Chemiluminescence

CAMERA OPTIONS

iXon3
Single Photon Sensitivity

Features
- Single photon sensitivity and back-illuminated sensors
- UltraVacTM cooling to -100ºC
- Unique ultrafast Crop Mode
- OptAcquire one-click optimization
- Count Convert calibrates in electrons or photons
- EMCALTM self-calibration of EM Gain
- DU-897 - The ultimate combination of sensitivity and frame rate
- DU-888 - 1MP resolution and exceptional sensitivity combined
- DU-860 - For high speed applications e.g Ca2+ flux

Clara
Resolution & Sensitivity

Features
- Ideal for high-resolution cell microscopy
- 1.3 megapixel interline CCD; 6.45 µm pixels
- Very low readout noise (< 3e-)
- Deep thermoelectric vacuum cooling down to -45°C
- Broad Vis-NIR wavelength coverage (with enhanced NIR version available)
- Up to 20 MHz readout speed
- USB 2.0 connectivity

Neo
Drive Optimal Performance

Features
- Lower detection limit than any CCD camera
- 5.5 megapixel sensor format and 6.5 um pixels
- Minimization of dark current and pixel blemishes
- Rapid frame time rates

CSU-X1
Confocal Spinning Disk Unit

Features
- 1500 - 10,000 rpm disk, producing between 300 to >2000 frames per second
- Easy synchronization of exposure to disk speed
- Manual and motorized filter changer models available
- Optional bright field bypass module
- 2x excitation throughput improvement compared to CSU10 or CSU22
- FWHM Z section < =1.2 µm
- Semrock dichroic and emission filter pairing provides optimum Signal to Noise Ratio (SNR)
- Filter wheel mounting for fluorescence and DIC analyzer
- Andor 10 position filter wheel available
- Yokogawa 6 and 12 position filter wheels

OPTIMIZED OPTO-ELECTRONIC CONTROL AND SYNCHRONIZATION

Compact, flexible, robust

Features

- Integral AOTF for microsecond laser selection and modulation
- Hardware blanking minimizes specimen exposure
- Long life solid state lasers with excellent stability (typical ± 0.5% peak to peak)
- Up to 6 solid state lasers (from 405, 445, 488, 491, 515, 532, 561, 594, 640 nm)
- Powers from 25 – 250 mW depending on wavelength
- Compact 4U 19” rack mount enclosure
- Quiet, cool with low power consumption

PRECISION CONTROLLER UNIT

Flexible Expansion

Features

- Provides system synchronization
- PCUB - Houses AOTF driver for ALC coupling
- Optional 16 bit Analog output for direct piezo Z control
- 8 digital inputs and 8 digital outputs for sensing and triggering external events
- Enables Revolution™ to slave or master for complex triggering synchronization
- Metamorph® control

IMAGING WORKSTATION

Optimized PC workstation for live cell work

Embryo Cell Division using the Andor Revolution XD system. Courtesy of Paula Sampaio, University of Porto Rua Campo Alegre, Portugal

Handling, processing and visualizing multidimensional images is very computer intensive. The Andor workstation is a high end Desktop PC optimized for use with Metamorph and for handling large data sets which arise from experiments that employ Andor cameras.

Features

- High end Windows® workstation
- Acquisition bandwidth for dual camera support
- ImageDisk removes dependency on RAM for huge datasets
- Multi-core processors for multi-threaded software
- High performance graphics with OpenGL
- Real-time volume rendering with Bitplane Imaris option

MOTORIZED XY & Z CONTROL

Automation

Z Stage Features
- Piezo stages with 100, 200 and 500 µm ranges
- 1 nm repeatability
- 2-8 nm resolution (depends on range)
- Up to 100 Z sections/s
- Specimen holders - slides, petri and microtitre plates

XY Stage Features
- Open and closed loop stages
- Typical travel >100 x 75 mm, with 0.02 µm resolution
- 30 mm/sec travel speed
- Perform multi-field scans for 6D imaging
- Create 4D mosaics
- Repeatability 0.2 to 0.3 µm rms

Piezo Objective Features
- PI PIFOC P721 - 100 µm travel
- PI PIFOC P725 - 400 µm travel
- Up to 20 Z sections/s
- 1.25 nm resolution
- Analog or digital control
- Oil and water objectives

CAMERA PORT ADAPTERS

Single & Dual Port

Single Port Coupler Features
- Magnification X = 1.0, 1.2, 1.5, 2.0 (others by request)
- Compatible with filter wheel or CSU+ filter wheel
- Achromatic 450-650 nm
- AR-coated
- Transmission > 98%
- Adjustable XY centering
- Sliding barrel focus control

Dual Port Coupler Features
- Enables simultaneous two-camera exposure with discrimination by wave length or polarization. A 100% mirror can be included for easy camera switching.
- Magnification X = 1.0, 1.2, 1.5, 2.0 (others by request)
- Compatible with 'C'/'CS' lenses, C-mount, filter wheel or CSU+filter wheel
- Magnification select in each arm
- Mounting cassettes 'store adjustment' simplifying exchange and minimizing readjustment

FILTER WHEELS & SPLITTERS

Emission discrimination

TR-FW10 Features
- 6,10 & 12 position, ø25 filter wheels
- Optional support for Ludl, Prior, ASI and Yokogawa wheels
- Matched to CSU or microscope C-mount coupler
- Infinity optical path for optimum filter performance
- External controller allows support of Sutter SmartShutter

Field Splitter Features
- Optosplit II and III which use 25 mm filters
- Field splitting for simultaneous 2 or 3 color imaging
- Matched to CSU or microscope C-mount coupler
- DualView™ and QuadView also supported

OLYMPUS®

Your Vision, Our Future

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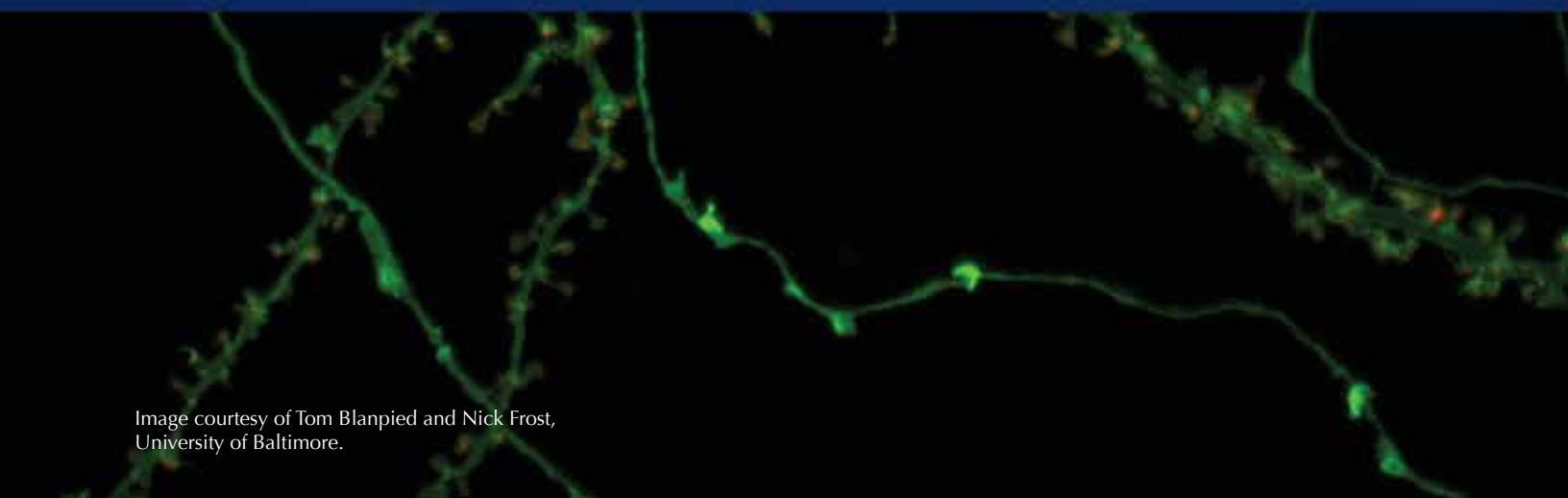

Image courtesy of Tom Blanpied and Nick Frost,
University of Baltimore.