OLYMPUS

Your Vision, Our Future

Imaging Software

cellSens

Life Science Microscopy

Comprehensive, Customizable – Clever

Software Solutions for Life Science

cellSens — for Every Application

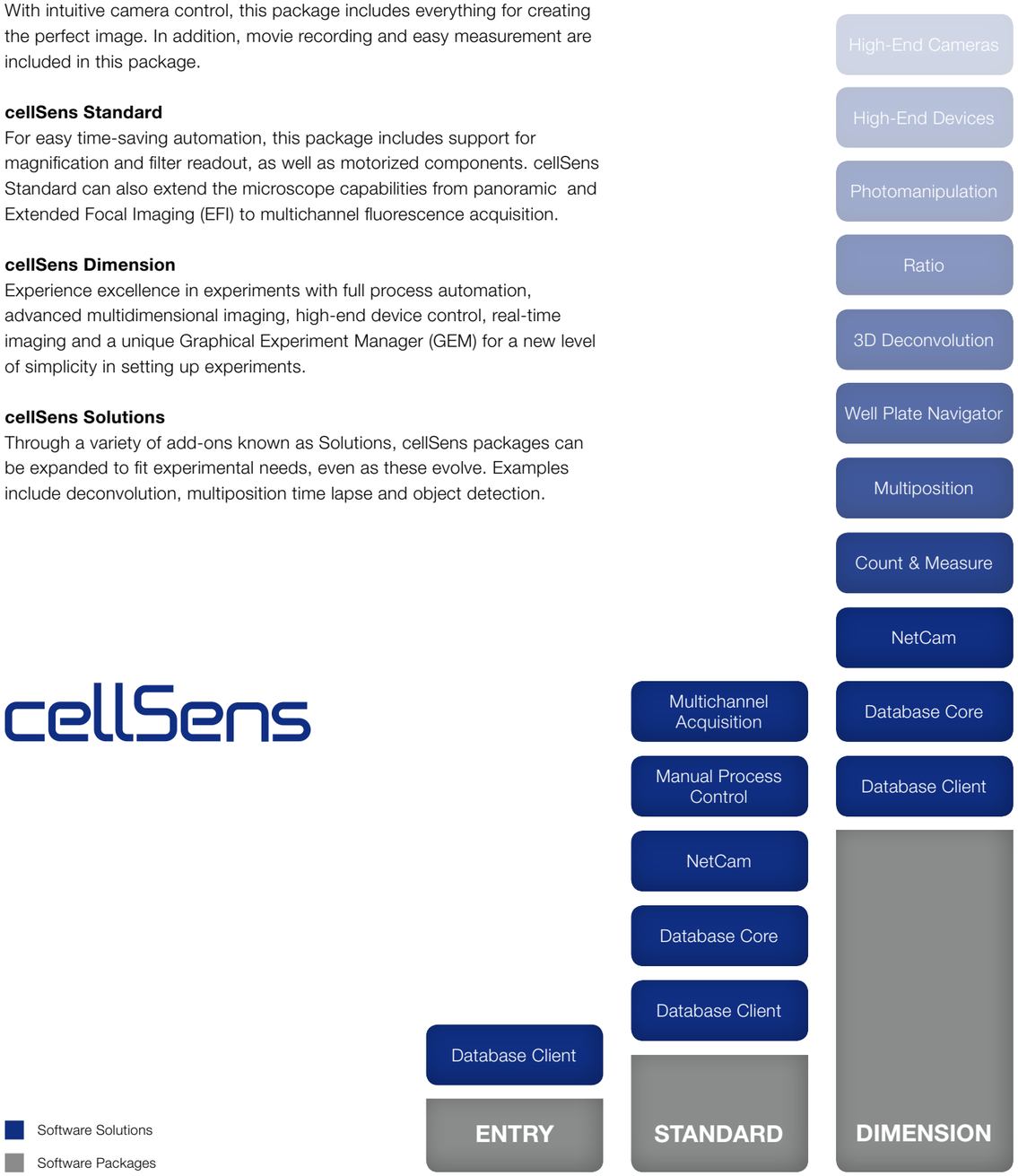
Olympus' cellSens packages provide features for every life science experiment, from basic image capture to advanced microscope-based experiments. The packages can be further supplemented with specialized solution modules enabling the creation of personalized professional imaging systems.

cellSens Entry
With intuitive camera control, this package includes everything for creating the perfect image. In addition, movie recording and easy measurement are included in this package.

cellSens Standard
For easy time-saving automation, this package includes support for magnification and filter readout, as well as motorized components. cellSens Standard can also extend the microscope capabilities from panoramic and Extended Focal Imaging (EFI) to multichannel fluorescence acquisition.

cellSens Dimension
Experience excellence in experiments with full process automation, advanced multidimensional imaging, high-end device control, real-time imaging and a unique Graphical Experiment Manager (GEM) for a new level of simplicity in setting up experiments.

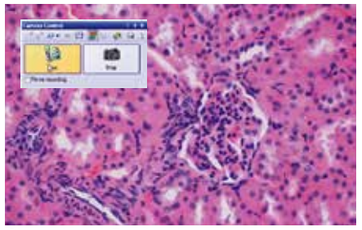
cellSens Solutions
Through a variety of add-ons known as Solutions, cellSens packages can be expanded to fit experimental needs, even as these evolve. Examples include deconvolution, multiposition time lapse and object detection.



Features at a Glance

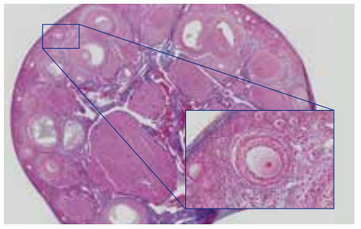
Snapshot and Movie Recording

- Intuitive camera control with autoexposure and white balance
- Precise manual focusing with focus indicator and live zoom
- High dynamic range imaging to capture every detail of the sample
- Measurements in snapshot and live image
- Synchronized side-by-side image comparison


Glomerulus in HE-stained human kidney section.

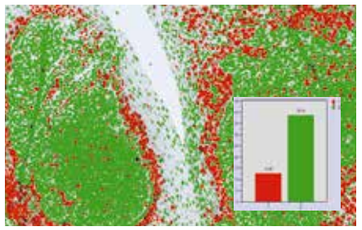
Panoramic Imaging and Extended Focus

- Acquire images of large samples in high resolution with panoramic imaging
- Capture all details of thick samples with Extended Focal Imaging (EFI) and Virtual Focus
- Acquisition can be either fully automated or assisted for manual microscopes


Azan-staining of a human ovary section with secondary follicle.

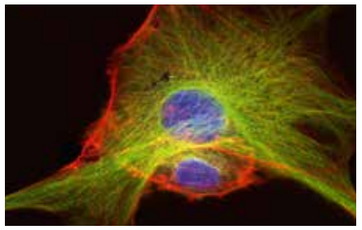
Measurement and Classification

- On-screen touch-counting and classification
- Various measurement tools including all common morphological and intensity parameters
- Threshold-based automatic object detection, classification and analysis
- Data export to MS Excel and automated report creation via MS Word


Phase analysis of Immunohistochemically stained tumor section.

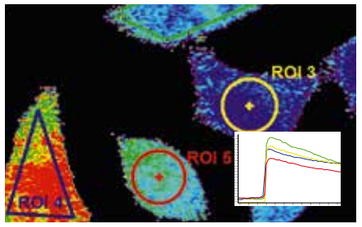
Multidimensional Imaging

- All dimensions of the sample are combined in one experiment (X,Y, Z, time, and color)
- Fully motorized acquisition processes
- Easy experiment setup with Graphical Experiment Manager (GEM)
- Flexible data-set navigation including slice and voxel viewers


Triple staining of bovine pulmonary artery endothelial cells: nucleus (DAPI, blue), alpha tubulin (BODIPY FL, green) and actin filaments (Texas Red, red).

Advanced Real-Time Experiments

- Capture events with meaningful microsecond accuracy with Olympus Real-Time Controller (RTC)
- High-end EMCCD and sCMOS camera support from leading suppliers
- High-end device support: spinning disks, image splitters, piezo Z, lasers and LED light sources as well as Olympus cellFRAP and cellTIRF systems

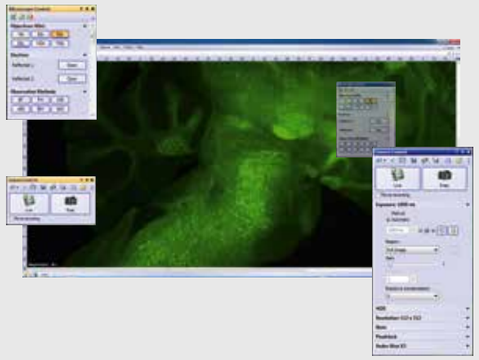


Ca^{2+} signals visualized using ratiometric imaging of Fura-2.

A Customizable and Comprehensive Toolbox

Get to What's Needed

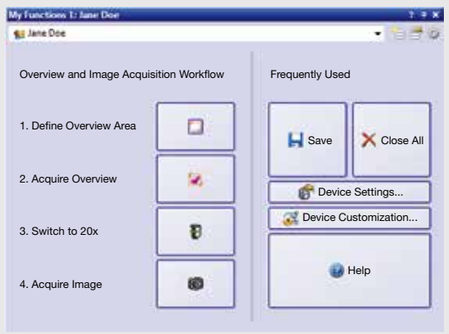
cellSens offers a range of customization options to freely design layouts and workflows for optimal efficiency. The concept of 'tool windows' enables a fast and easy route to a personal interface with direct access to required functions, keeping the interface free from clutter.



Tool windows can be positioned for the perfect display.

Make the Workflow Easier

My Functions enables personalized workflow design, simplifying and standardizing routine processes for increased reliability in results. In addition, the Macro Manager provides automation by recording and easily recalling a series of actions for increased efficiency in routine procedures.



Users can create a personalized control panel.

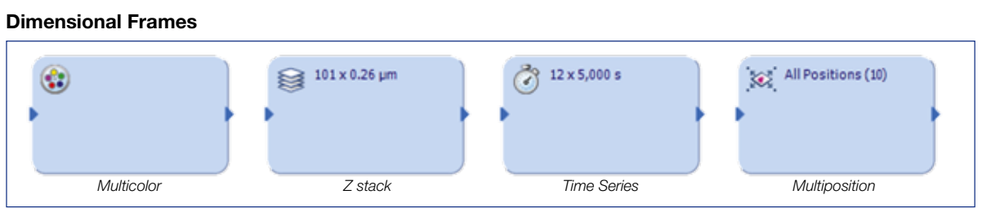
GEM – Experimental Setup Made Easy

The Olympus Graphical Experiment Manager (GEM) interface makes it easy to set up and run any kind of imaging experiment.

This unique interface allows experiment schematics to be drawn on screen with drag-and-drop actions. Using predefined acquisition icons, first-time users can quickly define multidimensional acquisition processes, while the advanced hardware control icons provide experienced users with the right tool for even the most complex experiments.

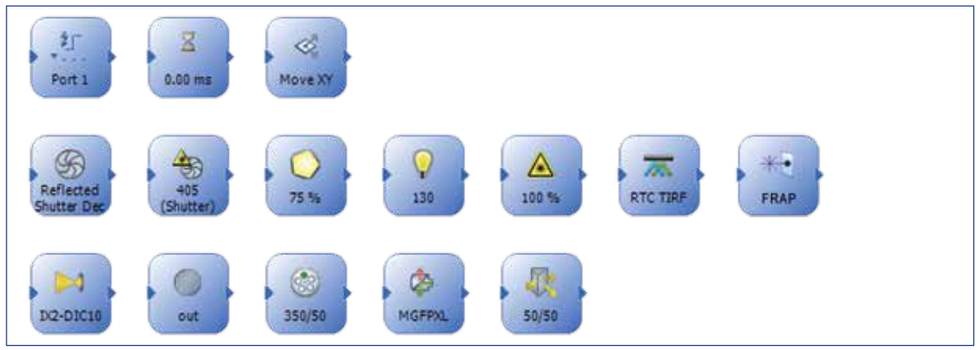
Acquisition Commands

Dimensional Frames



Multicolor *Z stack* *Time Series* *Multiposition*

Advanced Hardware Control



Analysis

Three Simple Steps: from Basic to Highly Advanced Experiments

The GEM interface scales to the imaging needs of the user, from beginners to imaging experts. Beginners are guided through the intuitive setup of basic multicolor experiments while advanced users benefit from the flexibility of GEM as the graphical programming language. With a few clicks of the mouse, simple experiments can be modified and extended.

1 **Multichannel Fluorescence**

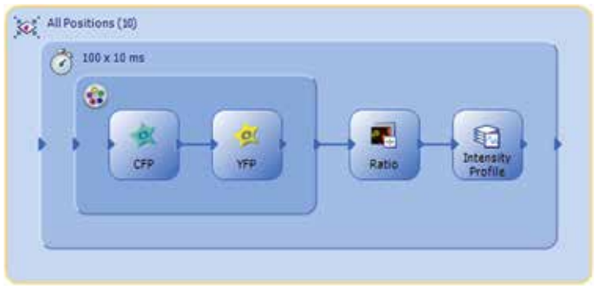
This experiment plan will result in a two-channel fluorescence image.

2 **Combining Multiple Dimensions**

Time and Z dimensions are added to the experiment. The experiment plan will now result in a two-color time series of a Z stack.

3 **Online Analysis**

Image acquisition commands can be combined with online analysis. In addition to acquiring multidimensional image data, this experiment plan will calculate a ratio image and measure ratio changes in predefined regions of interest. The result is given in real time.



cellSens Function Chart

		Dimension	Standard	Entry
Layout	User experience customization	●	●	●
View	Overlay multiple images	●	●	
	Document groups for side-by-side image comparison	●	●	●
	Movie playback	●	●	●
	Tile view (multiple images in a single data set shown side by side)	●	●	●
	Slice view for orthogonal plane viewing of 3D or time-lapse data sets	●		
	Voxel view for isosurface and volumetric rendering of 3D and 4D data sets	●		
Image Acquisition	Snap/movie acquisition	●	●	●
	Time-lapse at specified interval	●	●	
	Automated multiwavelength	●	Multichannel Acquisition	
	Automated multidimensional (Z stack, Time and Wavelength)	●		
	Spinning disc confocal acquisition and piezometric Z-axis support	High-End Devices		
	Graphical Experiment Manager	●		
	Manual assisted panoramic imaging	●	Manual Process Control	
	Multiposition acquisition and stage navigator	Multiposition		
	Automated panoramic imaging (requires motorized stage)	Multiposition		
	Instant Extended Focal Imaging	●	Manual Process Control	
	Automated Extended Focal Imaging (requires motorized Z-axis)	●		
	Simultaneous multiwavelength imaging (needs image splitter)	Ratio or High-End Devices		
	Live deblurring and High Dynamic Range Imaging (HDRI)	●		
	Photomanipulation acquisition (FRAP, Uncaging, Optogenetics, etc..)	Photomanipulation		
	Multiwell Plate acquisition	Multiposition and Well Plate Navigator		
Image Processing	Geometry/combine/filter processing	●	●	
	Fluorescence unmixing	●		
	Brightfield unmixing	●		
	Deblurring (no/nearest neighbor, Wiener Filter)	●		
	Kymograph	●		
	2D deconvolution (constrained iterative deconvolution)	●		
	3D deconvolution (constrained iterative deconvolution)	3D Deconvolution		
Image Analysis	Region and line measurements	●	●	
	Phase analysis	●		
	Automated object analysis and classification	Count & Measure		
	Interactive measurement	●	●	●*
	Intensity plot over Time/Z	●		
	Co-localization	●		
	Object counting (manual)	●	●	
	On-line Ratio and Intensity Profile analysis	Ratio		
	Off-line Ratio and Intensity Profile analysis	●		
Documentation and Collaboration	Automatically compose Word reports	●		
	Database image and data management solution for microscopy	Database Core	Database Core	
	Save and load images/documents from database	Database Client	Database Client	Database Client
Remote Use	Remote live image viewing	NetCam	NetCam	

* Three-point angle, four-points angle, arbitrary line, closed polygon, polyline, and perpendicular line only.

For more information please visit www.olympus-europa.com/cellSens

- **OLYMPUS CORPORATION is ISO9001/ISO14001 certified.**
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- Specifications and appearances are subject to change without any notice or obligation on the part of the manufacturer.

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