

OLYMPUS

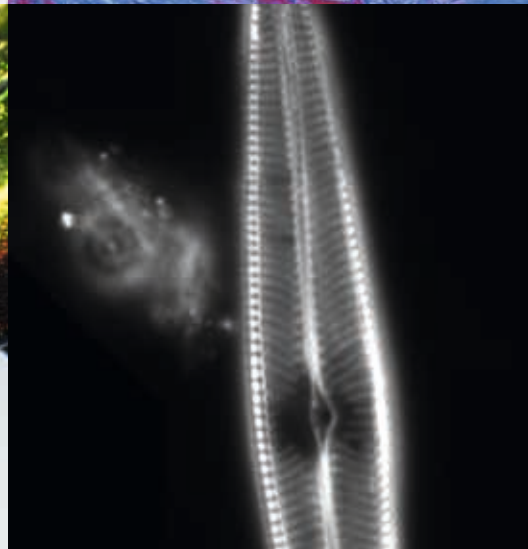
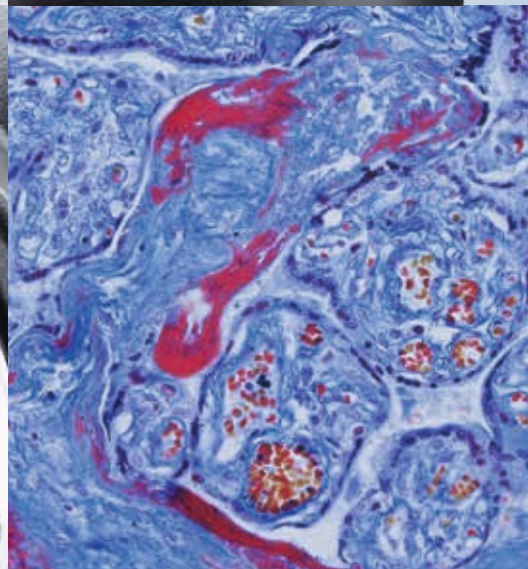
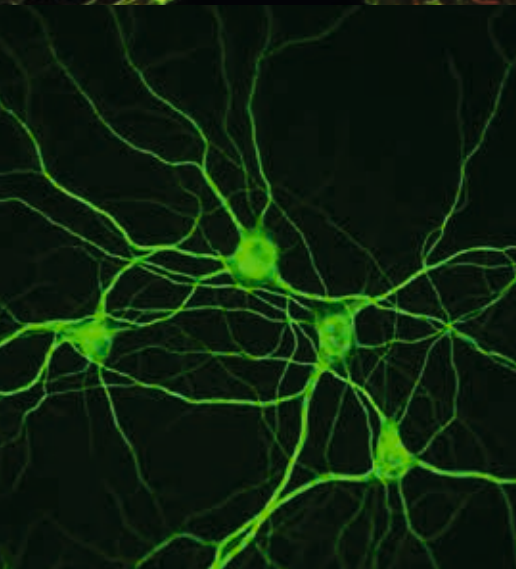
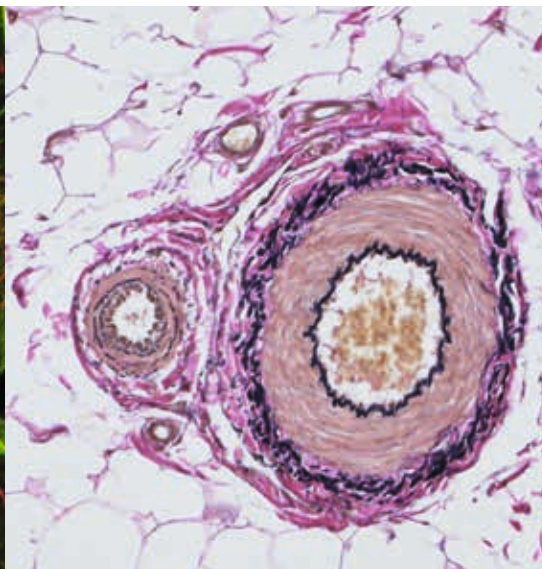
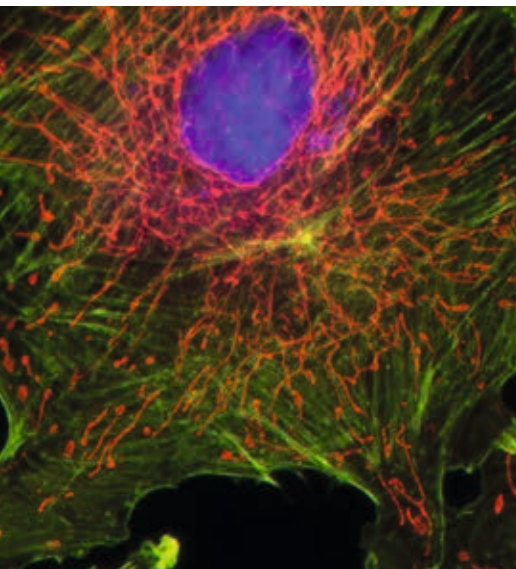
Your Vision, Our Future

Digital Cameras for Microscopy

Camera Overview

For Life Science Microscopes

Versatility by Design



THE FLEXIBILITY OF CHOICE

Your project needs the right camera, and this is definitely true when it comes to matching your digital imaging requirements with your project work. Sometimes you'll want dazzling color fidelity and at other times you'll need pixel-precise monochrome images. And then there are also those occasions when you would like a microscope camera that can do both. Add to this selection the ability to choose from a range of features and resolutions – the Olympus digital microscope camera range really does offer you the flexibility of choice.

Perfect Color Match pp. 4–9

Stay true to the colors: Color fidelity has been the unreachable zenith of digital microscope cameras until now – the Olympus color camera range provides color match and resolution capabilities for every application.

The Right Black and White pp. 10–11

It's all about sensitivity: Capturing the smallest intensity differences in every single pixel to build up the perfect picture of the fluorescent scene on your sample.

Multitalented All-Rounders pp. 12–15

The best of both worlds: The versatility to experience a dependable workhorse for all your imaging needs, from detailed brightfield to sensitive fluorescence.



Crystalline structures in polarized illumination.

STAYING IN THE SHADE

Color Management

Olympus' dedicated color profiling technologies, implemented across the entire color camera range, faithfully represent the sample colors, both easily and automatically. At every stage, from the oculars up to the monitor, the "real" image of the sample will be displayed and recorded.

The Importance of Color

Color is one of the main methods of differentiating the relevant aspects of a sample. The colors in the sample could be natural or imposed by the research protocol, and the overall balance of the colors is often used to determine certain properties or even diagnose disease. Therefore, it is essential that, as well as ensuring the optimum resolution and clarity, colors are captured with the right hue, saturation, and intensity as seen through the eyepiece.

Highest Fidelity

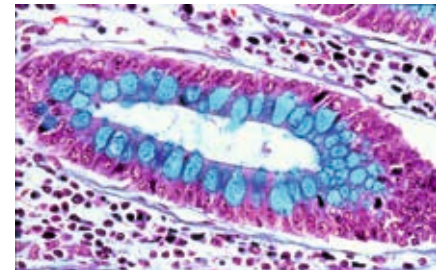
The unique Olympus color profiling technologies are individually tuned for each color camera model. International Color Consortium (ICC) reference profiles are used to govern the relationship between the colors at every stage of the imaging process. This ensures the best possible color fidelity, from the specimen to the monitor, on any Olympus color microscope camera.

Real Time, Real Color

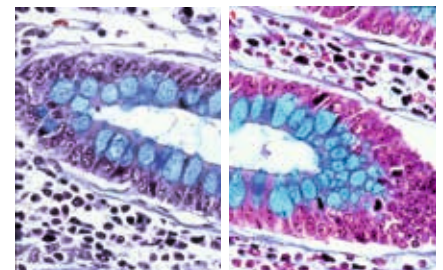
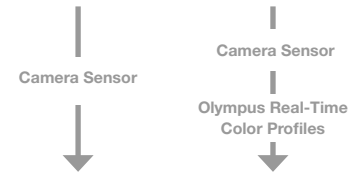
The Olympus color profiling technologies are already at work in real time, when you're looking at the live image. The best color representation is then ensured from the beginning of your acquisition process, at the highest possible speed (patented technology): There will be no need to readjust your image after capture to compensate for color mismatches.

Color Spaces

Different components in an imaging system offer different color spaces – also called color gamuts by the International Color Consortium (ICC). Each component involved in color reproduction is described by such a profile, and the resulting set of profiles is in turn used to achieve optimum color reproducibility for the imaging system, based on human perception. Some Olympus color cameras can also match the extended Adobe RGB color space, for color rendering at a professional level on supported monitors and printers.



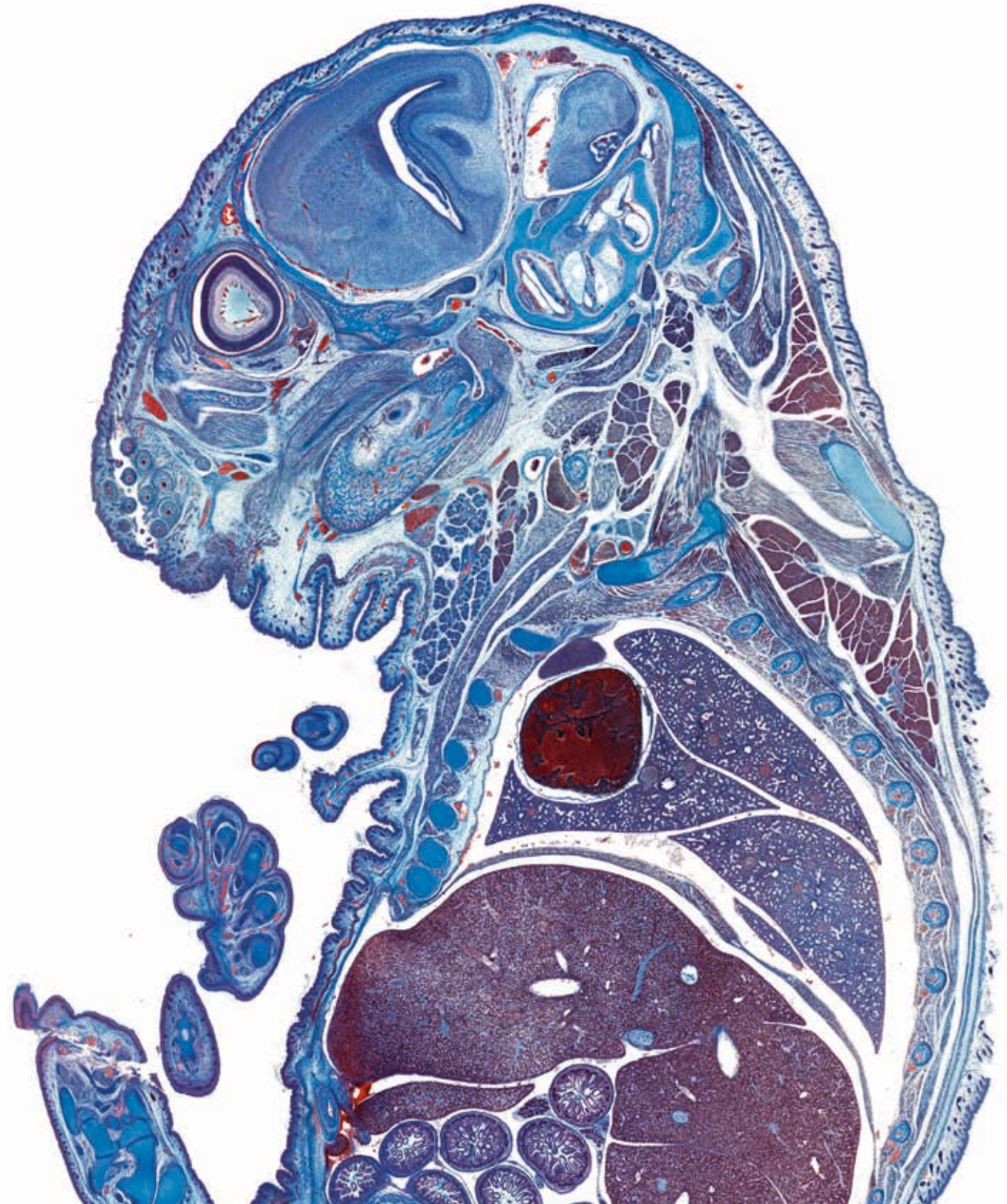
Histological section in brightfield illumination.



On-screen image of the same histological section, without (left panel) and with (right panel) Olympus color profiling technology.

PERFECT COLOR MATCH

Color reproduction presents microscope camera manufacturers with a very complex set of issues. Besides the color itself, the intensity and weighting within the given spectral range has to be taken into account, Olympus has worked hard to produce a range of cameras that provide perfectly balanced solutions for each and every application.



Brightfield panoramic image of an histological section of a rat embryo, processed with MIA (Multiple Image Alignment) software function.

XC30 and XC50

Whether you choose the 3 megapixels XC30 or the 5 megapixels XC50, you'll be able to take advantage of active Peltier sensor cooling to obtain an advanced level of performance. The minimal background noise and color fidelity provided by these cameras is especially beneficial in pathology and histology applications, where the occasional high-intensity fluorescent sample can also be correctly imaged.

Keeping a Cool Head

The active cooling of the Olympus XC30 and XC50 cameras employs a Peltier element to maintain the sensor chip at a constant 10°C in standard ambient surroundings, guaranteeing perfect color images rich in contrast, with excellent color fidelity and minimal background noise. The cooling also enables a diverse range of exposure times to be covered, maximizing sensitivity in low-light applications.

Versatile Functionality

Both cameras offer a high dynamic range in all supported resolutions. When combined with the reduced background noise afforded by the Peltier cooling system, this allows for a sharp increase in the signal-to-noise ratio. High contrast images, which accurately capture the essence of all sample details, hues, and intensities, are just a click away. Frame rates to meet the needs of any application are achieved with pixel-binning capabilities, while the partial readout mode speeds up capture. By freely defining a ROI (Region of Interest) to read from, file sizes are also reduced – ideal for storage as well as sharing.

Consistent Control

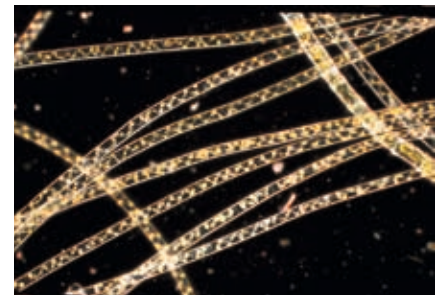
The Olympus XC30 and XC50 cameras are fully operated using the cellSens imaging software, making it quick and easy to reach the camera's full capabilities and ensuring that the optimum solution is provided in the face of any challenge, such as image processing, commenting, reporting, and archiving.



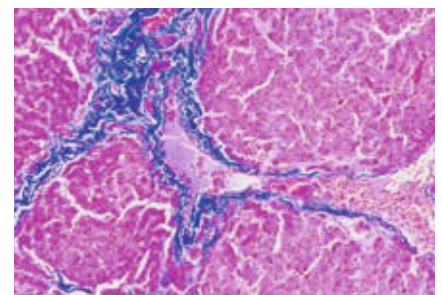
XC30: 3 megapixels color camera with cooling.



XC50: 5 megapixels color camera with cooling.



Algae in darkfield illumination.

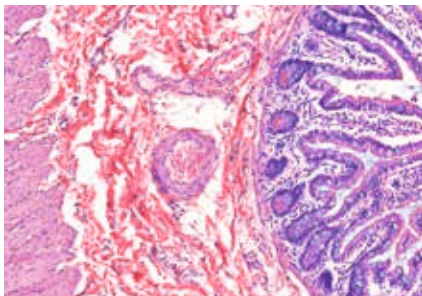


Histological section in brightfield illumination.

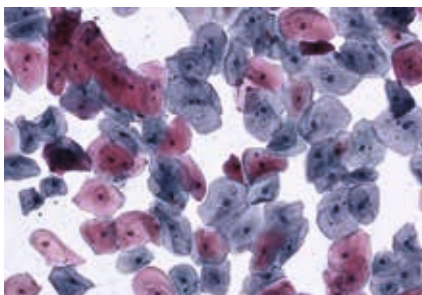
PERFECT COLOR MATCH



DP22 and DP27: 3 and 5 megapixels color cameras.



Histological section in brightfield illumination.



Pap smear in brightfield illumination.



Optional stand-alone controller connecting DP22 camera directly to a computer monitor. Camera is controlled via mouse and an on-screen menu.

DP22 and DP27

Lifelike digital microscopy is now a reality with the next generation of Olympus digital cameras. Achieving an experience almost indistinguishable from the oculars, the 5 megapixels DP27 and 3 megapixels DP22 deliver crisp and fluid Full HD live images directly to the monitor. Introducing new multi-mode functionality guarantees expert results with minimum effort in a wide range of applications throughout life science.

Unmatched Quality with Full HD

The new cameras deliver detailed images with superior viewing comfort, with a Full HD live image at 30 fps for the DP22 and 22 fps for the DP27. Thanks to the advanced progressive scan readout technology, panning and focusing are always fluid and natural. When a region of interest demands further investigation, the DP27 instantly achieves precise focusing and zooming with a fast 15 fps live image at 5 megapixels – deciphering extra detail from the most intricate of samples.

Perfect Color Balance, Every Time

Designed with the user in mind, the new cameras boast an automatic white point balance. Regardless of changes in illumination conditions, colors are always perfectly balanced, and color cast is automatically compensated. Without the need to constantly adjust the settings or spend time on post-acquisition correction, producing a perfectly balanced image couldn't be simpler.

Expert Results in Every Task

Introducing a new level of user-friendly camera operation, three color modes are now available, and optimizing camera settings for each sample or study has never been so easy. The High-Fidelity mode creates a faithful image true to the oculars, while Normal mode offers enhanced colors ideal for pale stained samples or for clearly presenting the samples to an audience by means of various monitors and projectors. When employing phase contrast, the dedicated Cell Culture mode generates a truly balanced image, with clear details in both dark and bright areas.

Stand-Alone Control Option

Sample evaluation at short notice is sometimes a core part of the working day, and having quick and easy access to an imaging system is vital. Providing unmatched convenience and ease of use, the optional DP2-SAL stand-alone controller directly connects the DP22 or DP27 to a monitor, removing the need for a dedicated computer. Simplifying image acquisition with no compromise on camera quality or functionality, the optional unit is ready to use in seconds, and includes powerful features such as movie recording with audio and touch-screen control. Designed for maximum convenience, the controller also provides automatic image calibration and enables quick, reliable measurements easily exported to Microsoft Excel.

DP2-SAL

The DP2-SAL controller converts the DP22 and the DP27 cameras into an instantaneous imaging system, which can be accessed in mere seconds and is optimized for a range of applications.

Always Ready

There is no need to wait for computer boot-up times or for software loading delays: Simply place the sample on the microscope and capture images with one click of the mouse. Rich in connections and with a complete range of functions, the DP2-SAL controller brings its advantages to many different application scenarios, such as routine work, multiple-observer discussions, or projection to an audience, and quick creation of educational materials with audio comments. Enabling the comfort of viewing Full HD live images on a variety of monitors, the DP2-SAL achieves complete stand-alone operation with full camera functionality and quality.

Need Connections?

With multiple USB connections, the DP2-SAL permits storage of movies and images onto portable storage devices, with exposure settings, magnifications, and other parameters stored for future reference. Images can also be saved to a shared folder on a networked drive via the Ethernet connection. The connection of a USB mouse and keyboard allows rapid menu navigation, precise measurements and direct comment annotation on images, if required. Finally, microphone and speakers can be directly connected to the DP2-SAL controller, allowing the recording of comments while capturing a movie.

Ergonomically Easy

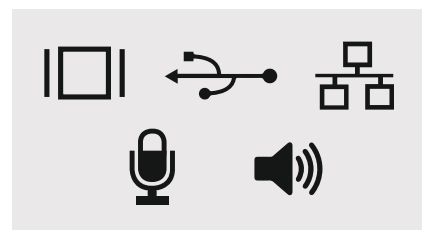
The on-screen menu of the DP2-SAL is simplified to allow quick access to the most important functions, while allowing intuitive execution of all operations by supporting touch-enabled monitors. When used alongside an encoded nosepiece, precision is automatically maintained in the measurement functions as the actual magnification is directly read from the microscope and the reference scale adjusted in real time.

Present and Discuss

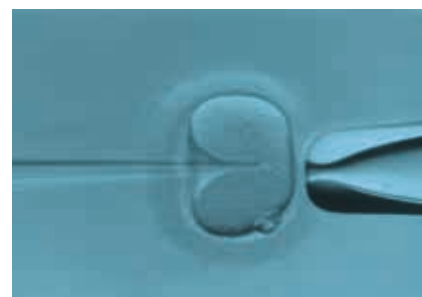
The DP2-SAL stand-alone controller takes full advantage of the DP22 and DP27 Full HD live image feed, for fast and fluid panning and focusing. Any monitor or projector can be connected via the DVI-I port, providing the freedom to choose the ideal output device size for a variety of applications. This affords maximum comfort together with shared on-screen viewing, ideal for intensive sample browsing, collaborative workflows, and prolonged use. Acquired movies and images can also be loaded via USB storage for on-screen viewing, zooming, and panning with a single click.



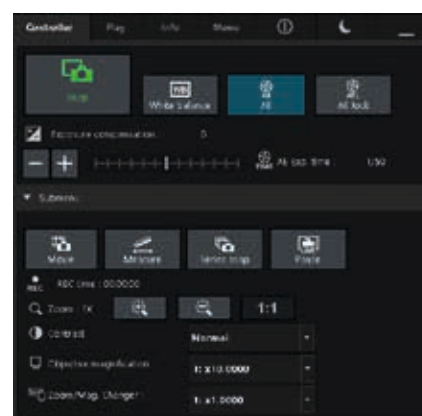
DP2-SAL: Optional stand-alone controller for DP22 and DP27 cameras.



Stay connected: DVI, USB, Ethernet, Microphone, and Audio OUT are available.



In-vitro fertilization with digital live image; monitor directly connected to a DP22 camera using DP2-SAL controller.



DP2-SAL on-screen menu providing direct one-click access to functions, controlled via mouse or touch-enabled monitor.

PERFECT COLOR MATCH



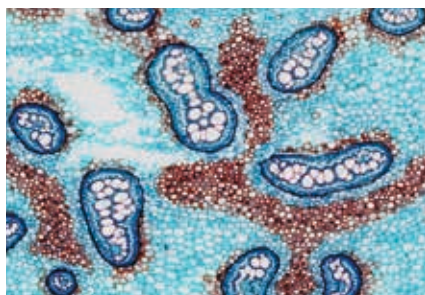
UC30: 3 megapixels color camera.



UC50: 5 megapixels color camera.



Completely in-focus image of an insect, acquired with EFI (Extended Focus Imaging) software function in reflected brightfield illumination.



Vegetal sample in brightfield illumination.

UC30 and UC50

The sensor on these cameras brings precision to image acquisition, with 3 megapixels on the UC30 and 5 megapixels on the UC50. Fast frame rates and pixel binning make them ideal for any life science application.

Images through Precision

The technology of the color sensor in the UC30 and UC50 cameras measures the intensity of each pixel with high precision, allowing a superior representation of the sample colors and details. With up to 14 bit per color channel, you will be able to carry out measurements with confidence, while the expanded dynamic range will allow the camera to present vibrant details on-screen of even weakly illuminated structures. This is particularly true because of Olympus, real time optimization of camera colors insofar as image capture is true to life.

Technological Flexibility

Both cameras offer the choice of true pixel-binning modes, useful in any situation where more sensitivity or more speed is needed. However, even when running at their full resolution, the Olympus UC30 and UC50 can reach adequate speeds for all standard life science applications. The possibility of exposing the image for up to 160 seconds is also available, adapting to a variety of illumination scenarios.

Resolving the Issues

Capturing the essence of a sample is a balance between coverage and detail. Lower magnifications provide greater coverage, but tend to compromise on detail. This is where the 5 megapixels UC50 camera gains the advantage, without compromise. While images are captured at low magnification for maximum sample coverage, the increased available resolution allows you to zoom right in, clearly resolving the sample details.

Easy Installation and Control

The use of a standard C-mount ensures compatibility with all light microscopes carrying this optical port, while the use of the FireWire™ interface means just one cable to provide both power and a high speed data connection. All functions of the Olympus UC30 and UC50 are operated through the Olympus cellSens software, where intuitive control of camera performance is adapted for your specific needs.

SC100

The SC100 camera's 10.5 megapixels are fully dedicated to brightfield documentation tasks, where capturing each and every sample detail is essential, especially when working at low magnifications.

Get the Details

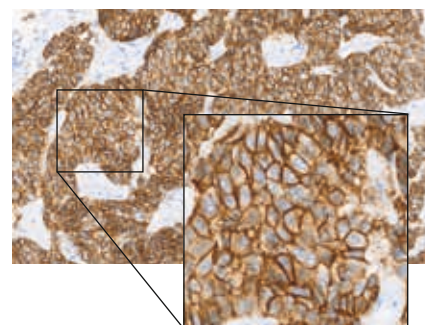
With the SC100 digital color camera, you can quickly capture in-depth sample details in a single shot, without using any pixel-shift technology. The newly implemented sensor packs more than 10.5 megapixels, increasing its resolving power to one surpassing the resolution of the human eye when looking through the binoculars. This frees users from needing to take multiple, high magnification images of a sample to preserve resolution while capturing a large area. Similarly, images can be easily investigated at high digital magnifications at a later date, even if this was not initially intended when they were captured using a low magnification objective. The SC100 makes sure you always see the bigger picture, without losing the details.

Follow Your Needs

Despite the high resolution, panning and focusing are comfortable and quick thanks to the high frame rates offered by the different live modes. Highly sensitive detection along with pixel binning will assist in all applications, especially those involving darkfield imaging and phase contrast. Furthermore the high-speed USB 2.0 interface allows for an easy connection to any available computer.



SC100: 10.5 megapixels color camera.



Detail extraction from histological sample in brightfield.

SC50

Quality has never been so affordable with the 5 megapixels SC50. Designed for everyday use and ideal under low light conditions, fast and Full HD imaging is now easily achieved in a wide range of routine applications.

Smartly Noise-Free

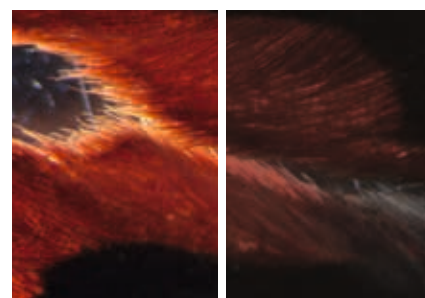
The SC50 camera quickly delivers the perfect snapshot. In addition to achieving Full HD images at 32 fps, sensitivity is now vastly improved by the sensor's light-guide technology, boosting the light collection capability of each pixel. Meanwhile, Olympus Smart Image Averaging keeps noise under control, producing clean images especially in low light. The dedicated algorithm cleverly detects sample movement and protects against "trail" artefacts, while lateral resolution is enhanced with a new, smaller pixel size.

Perfect Color Balance, Every Time

Designed for ease of use, the SC50 boasts an automatic white point balance. Regardless of changes in illumination conditions, colors generated are always perfectly balanced and devoid of any color cast – without the need to constantly adjust the camera settings or correct images post-acquisition.



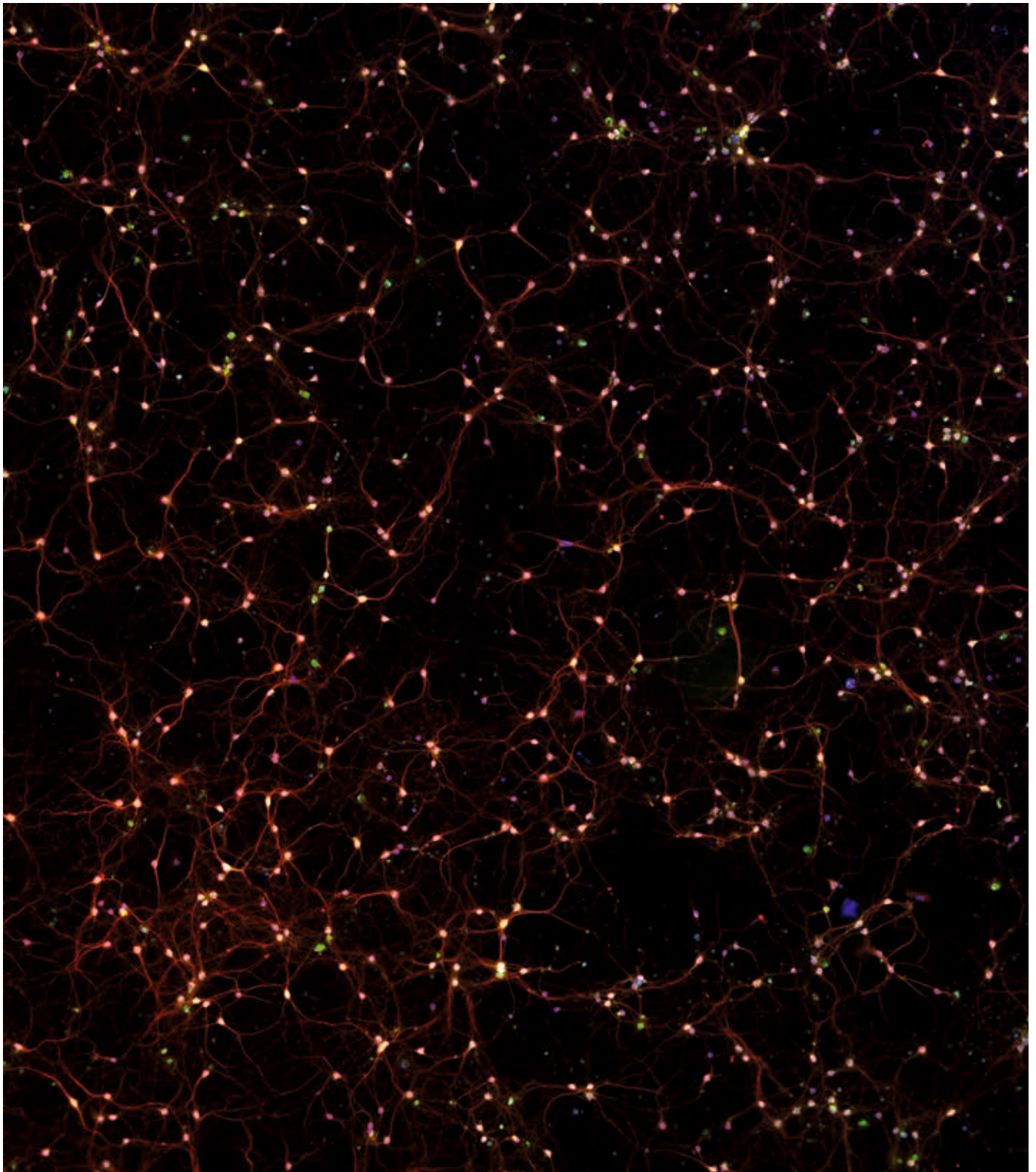
SC50: 5 megapixels color camera.



Detail of a butterfly wing with transmitted dark-field illumination. SC50 light-guide technology provides a brilliant picture (left panel) in contrast to a standard CMOS sensor (right panel)

THE RIGHT BLACK AND WHITE

Even though fluorescence microscopy is intimately concerned with using the best combinations of excitation and emission spectra of dyes, the cameras used for fluorescence microscopy imaging must be designed to provide maximum sensitivity (capturing as many photons as possible) and clarity (as little background noise as possible). The Olympus monochrome camera offers an abundance of both of these qualities.



Panoramic image of a mouse's neuronal tissue sample, stained with multiple fluorochromes and processed with Extended Focus Imaging (EFI) and Multiple Image Alignment (MIA) software functions.

XM10

The XM10 offers all of the properties required to provide dependable fluorescence microscopy images: Extremely high sensitivity, a cooled sensor chip, variable resolutions, and an optional external trigger function.

Designed for Fluorescence

At full resolution, the XM10 is ideal for all fluorescence acquisitions since it is extremely sensitive, low in electronic noise, and supports long integration times of up to 160 seconds. The sensor has a pixel size of $6.45\ \mu\text{m} \times 6.45\ \mu\text{m}$, which, in combination with the camera cooling, ensures that the XM10 is ideal for recording even the faintest fluorescence signals in your specimen.

The Right Tool for the Job

The XM10 employs a sensor chip cooled to 10°C (at 25°C ambient temperature) with a 14 bit dynamic range and 15 fps (frames per second) at full resolution. It offers three binning modes: 2x, 4x, and 8x, resulting in increased sensitivity and excellent frame rates in live mode, which make it easier to focus and locate areas of interest within the field of view while conserving highly sensitive fluorescence samples.

Four Models

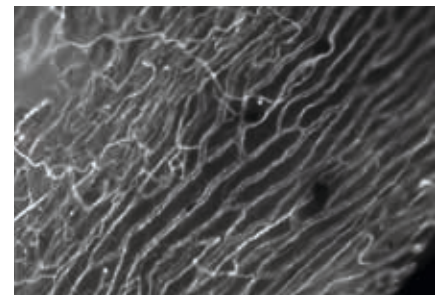
The four different versions of the XM10 are optimized with the user application in mind. Building on the capabilities of the basic XM10, the IR-extended version (XM10-IR) is ideal for the entire range of fluorescent dyes, including those emitting in the near-IR region such as CY5 and CY7. A specific model (XM10-T) guarantees precise image capture through the presence of an external trigger input – for integration into real time acquisition systems such as Olympus xcellence and cellSens. The most advanced camera in this range (XM10-TIR) combines these advanced features to provide the user with the perfect camera for all levels of fluorescence microscopy.

Easy to Integrate

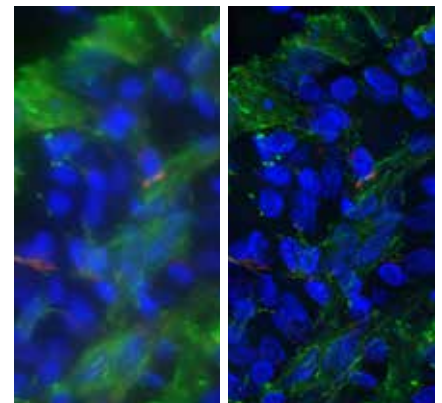
The Olympus XM10 makes a great addition to any microscopy system not only because of its great features, but also since it is easy to integrate, using a standard C-mount adaptor to connect to the microscope, and the high-speed data transfer and power capabilities of the FireWire™ interface. The XM10 is fully supported by the Olympus cellSens software, ensuring that whatever the application, the information is not only fully collected but properly analyzed, processed, and displayed. Ideal for a range of applications, the XM10 works in synergy with Olympus cellSens software to achieve excellent results in functions such as High Dynamic Range (HDR) acquisition, fast deconvolution, and multi-fluorescence panoramic imaging. Maximum detail is resolved from even the most weakly emitting fluorescence sample.



XM10: 1.4-megapixels monochrome camera with cooling.



Axon and dendrite morphogenesis during neuronal maturation task.



Deconvolution (right panel) of a gut tissue section stained with multiple fluorochromes.

MULTITALENTED ALL-ROUNDERS

When there is a requirement for two or more seemingly distinct technologies in one instrument, a compromise is often reached that makes the product good but not great. Reversing this trend, these three high-performance color and monochrome cameras will excel at every task.



Stereo microscopy image of a GFP-expressing Drosophila sample, overlay of brightfield and fluorescence images. DP80 precise centering mode and HDR processing of fluorescence image were used.

Image courtesy of Kei Ito, Ph.D., Institute of Molecular and Cellular Biosciences, University of Tokyo.

DP80

Thinking outside the box, Olympus has come up with the multitasked DP80. Incorporating both a color and monochrome chip within the same housing, the DP80 camera provides quality imaging for color and fluorescent microscopy applications alike. The color sensor achieves bright and crisp imaging, complementing the ultrasensitive photon detection of the monochrome sensor. Together, these two diverse functions within a single camera offer maximum versatility for a range of life science applications.

A Camera of Many Talents

The unique DP80 excels equally at high-resolution color documentation and high-performance fluorescent detection alike. Olympus real-time color profiles provide lifelike hues, while the Olympus Fine Detail Processing algorithm extracts maximum detail in combination with the pixel-shifting capabilities of the color sensor. At the same time, the high sensitivity up to the near-IR range of the monochrome sensor allows for precision imaging of fluorochromes such as Cy7. With exposure settings up to 60 seconds, photon detection is maximized for even very faint fluorescent signals. The signal-to-noise ratio is further improved across both sensors with Peltier cooling, ideal for the complex and detailed imaging requirements within life science.

Fast Response

Designed to meet the variable demands of a shared workplace, the DP80 removes the need to switch camera or optical path, instead seamlessly shifting between monochrome and color sensors in only three seconds. This is easily managed, either automatically or at the click of an icon, and requires no recalibration of chip alignments, saving valuable time. The readout of both chips is always progressive, for a fast and fluid live image, free of any artefacts like striping and color-ghosting. With an on-screen experience which truly matches the one at the oculars, the DP80 camera can successfully also support any joint discussion or presentation need.

Creative Combinations

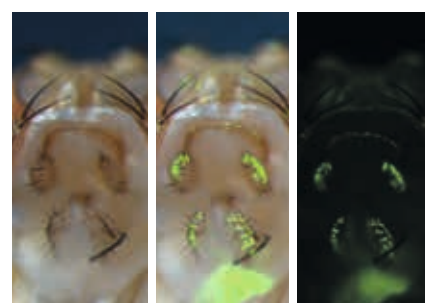
You can now effortlessly achieve superior combined color and fluorescent imaging, with the ability to quickly overlay images derived from both sensors. An impressively accurate correspondence is ensured without additional calibrations, thanks to expert manufacturing processes, and is activated with a single click of the mouse. Now you are free to explore exciting new paths in the lab and clinic alike, with the confidence of an assured correspondence between color and fluorescence markers.

Confidence without Compromise

Further to cost-efficiency, the DP80 dual-sensor camera eliminates the need for individual separate cameras and an optical switch. This makes it highly valuable in the fast-paced research environments of today, where equipment must often be versatile and have interchangeable functions, without compromising on quality, ease-of-use, or performance.

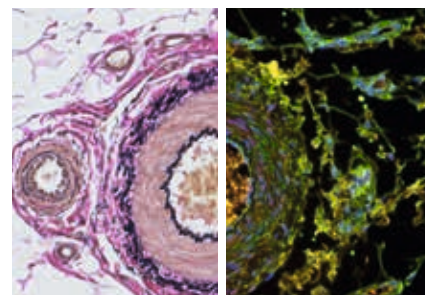


DP80: Cooled dual sensor camera with 12.5 megapixels (color) and 1.4 megapixels



The central shows overlay of color (left panel) and monochrome (right panel) images of GFP-expressing drosophila sample. DP80 precise centering mode and HDR processing of fluorescence image were used.

Image courtesy of Kei Ito, Ph.D., Institute of Molecular and Cellular Biosciences, University of Tokyo.

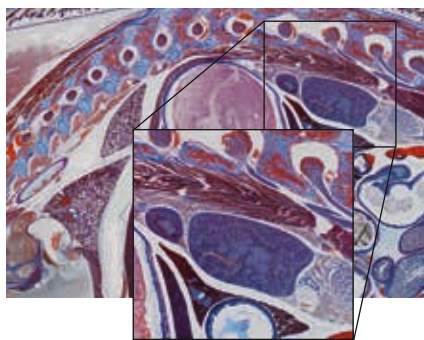


Histological section (left image) of healing tissue also containing CY5 and CY7 labelling of collagen I and III (right image).

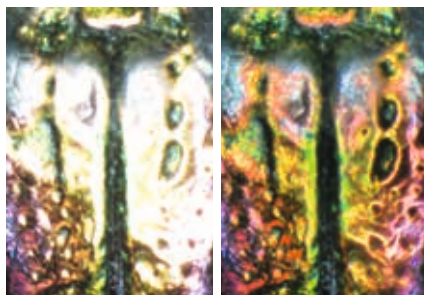
MULTITALENTED ALL-ROUNDERS



DP73: 17.2 megapixels color and monochrome camera with cooling.



Detail extraction from a histological section of a young mouse.



Detail of insect sample in reflected brightfield. Image on the right shows automatic compensation of overexposed areas using DP73WDR Wide Dynamic Range mode.

DP73

Merging Olympus expertise in pixel-shift sensor technology with the innovative features of the high-end DSLR camera range, the DP73 opens up new paths in capturing precise images. Quality is unsurpassed in color documentation, and flexibility is provided for fluorescence images – for a truly all-round performance in a variety of applications.

Simply a Better Image

The 17.2 megapixels DP73 digital camera implements the innovative Olympus Fine Detail Processing technology, directly derived from the Olympus top-range E-5 consumer DSLR. This hardware function monitors the image pixel in real time, preventing fine details from being obscured by surrounding structures. The result is an image free of artefacts, where every intricate sample detail is enhanced and clearly visible.

Evolving Technology

The top resolution of the DP73 is dramatically improved in comparison with previous models, allowing for greater detail capture when working at low magnifications. However, increasing the resolution is not the only factor involved in final image quality. Olympus has applied its extensive knowledge of pixel-shifting sensors to implement the innovative 3CCD mode, reading the actual RGB values of each shifted pixel and thus allowing the true color to be measured directly, without any interpolation. The result is an image free from any pixel-shifting artefact and with the color range usually only obtained by using expensive 3CCD cameras.

DP73WDR: Responding to the Challenges

It is not uncommon for microscopy samples to present wide variations in brightness, challenging the camera's capability to perform correct exposure levels across the complete field of view. The DP73WDR presents a solution in the form of its WiDeR (Wide Dynamic Range) mode, which continuously checks the exposure of each image pixel, applying tonal enhancements only where necessary. Dynamic exposure across the image brings out those details previously lost to darkened or washed-out areas. Furthermore, this mode works in real time, allowing the user to regulate the effect level directly on the live image, for the perfect snapshot.

A True Performer, also in Fluorescence

Panning and focusing is fast and fluid, thanks to the progressive readout sensor, allowing you to experience the same visuals on the computer screen as you would normally get from the microscope oculars. This is particularly true thanks to the DP73 color quality, where the Olympus real time color profiling technology has been further tuned for the hues normally used in the histology and pathology applications. You will be able to distinguish more subtle hue variations, discovering a striking correspondence between the image on the screen and the one at the oculars. With a generous pixel density, and a signal to noise ratio enhanced by Peltier cooling, the DP73 also excels in standard fluorescence imaging, while providing the versatility ideal in the diverse applications of a shared laboratory. To further tailor performance to your needs, a special monochrome mode is available to customize the camera sensitivity to your fluorophore of choice.

XC10

With excellent image quality, high sensitivity, and long integration times optimized for fluorescence imaging, the Olympus XC10 Peltier-cooled camera offers users a flexible imaging setup for both monochrome and color applications, effectively combining high sensitivity fluorescence with true color imaging.

Fast, Smooth, and Sensitive

The powerful cooled sensor chip offers the clarity of 14 bits per color channel and has the ability to provide very high frame rates via the use of pixel binning. In the 2x binning mode, the camera provides more than 28 fps, which increases to nearly 50 fps when using 4x binning. This makes the XC10 ideal for applications that require fast image acquisition of dynamic objects. In addition, the high image frequency can be used to focus on samples or locate areas of interest directly on the PC screen.

The high sensitivity of the XC10 is the result of a large pixel size, defining the camera's ability to be a well-equipped all-rounder; not only perfect for color imaging, but also for meeting high expectations in sensitive fluorescence applications. There is no longer the need to switch camera for the application in hand. Quality is not compromised for either color or fluorescence imaging techniques.

Chilled

The Peltier-cooled sensor maintains a temperature of 10°C (at ambient temperature), enabling this multifunctional camera to provide color and black-and-white images that are rich in detail and contrast, with extraordinarily low background noise. The extensive exposure time range (from 100 μ s to 160 s) also adds to the XC10's appeal, ensuring that both strong and weak signals are captured with equal fidelity.

A Team Player

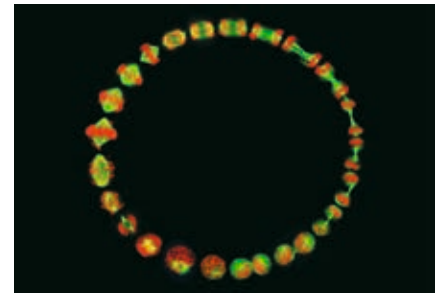
Whatever the application, the XC10 can provide the images that enable research to be pushed forward. With the ease of both C-mount optical coupling, FireWire™ data, and power connectivity, integrating the XC10 into your imaging system is easy.

Four Models

In addition, the XC10 is available in other three versions dedicated to maximize its performance in specific applications. The IR-extended version (XC10-IR) is ideal for the entire range of fluorescent dyes, including those emitting in the near-IR region such as CY5 and CY7. The Trigger version (XC10-T) guarantees precise image capture through the presence of an external trigger input – for integration into real-time acquisition systems such as Olympus xcellence and cellSens. The most advanced camera in this range (XC10-TIR) combines both advanced features to provide the user with the perfect camera for all levels of fluorescence and brightfield microscopy.



XC10: 1.4 megapixels cooled color and monochrome camera.



Sequentially recorded cell cycle.

Image courtesy of Josh Morgan, Dr. Rachel Wong, Department of Anatomy and Neurobiology, Washington University, School of Medicine, St. Louis, USA.

Color Cameras

	DP22	DP27	SC50	SC100
Image Sensor	Color CCD	Color CCD	Color CMOS	Color CMOS
Sensor Type	Sony ICX 687 AQA	Sony ICX 625 AQA	Aptina MT9P006STC	Aptina MT9J003
Sensor Size	1/1.8 inch	2/3 inch	1/2.5 inch	1/2.3 inch
Resolution (max.)	1920 x 1440 pixels	2448 x 1920 pixels	2560 x 1920 pixels	3840 x 2748 pixels
Pixel Size	3.7 x 3.7 µm	3.45 x 3.45 µm	2.2 x 2.2 µm	1.67 x 1.67 µm
Binning	2x	2x	2x, 4x	2x
A/D Converter	8 bit	8 bit	12 bit	12 bit
Exposure Time	from 50 µs to 8 s	from 50 µs to 8 s	from 31 µs to 2.74 s	from 0.12 ms to 14.6 s
Live Frame Rates	25 fps at 1920 x 1440 pixels	15 fps at 2448 x 1920 pixels	15 fps at 2560 x 1920 pixels	3 fps at 3840 x 2748 pixels
	30 fps at 1920 x 1080 pixels	22 fps at 1920 x 1080 pixels	32 fps at 1920 x 1080 pixels	12 fps at 1920 x 1374 pixels
	25 fps at 960 x 720 pixels	30 fps at 1224 x 960 pixels	55 fps at 640 x 480 pixels 77 fps at 480 x 270 pixels	42 fps at 960 x 686 pixels
Cooling System	No	No	No	No
External Trigger	No	No	No	No
Data Transfer	USB 3.0	USB 3.0	USB 3.0	USB 2.0
Color Profiles	Olympus real time color profiles	Olympus real time color profiles	Olympus real time color profiles	Olympus real time color profiles
Partial Readout	Yes	Yes	No	No
Remarks	· Stand-alone option · Fast and Fluid Full HD Live	· Stand-alone option · Fast and Fluid Full HD Live	· Automatic White Balance · Active Noise Cancellation · Fast Full HD Live	· Single-shot 10.5 megapixels · Convenient USB interface
Operating System Compatibility	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit

	UC30	UC50	XC30	XC50
Image Sensor	Color CCD	Color CCD	Color CCD	Color CCD
Sensor Type	Sony ICX 252 AQ	Sony ICX 282 AQ	Sony ICX 252 AQ	Sony ICX 282 AQ
Sensor Size	1/1.8 inch	2/3 inch	1/1.8 inch	2/3 inch
Resolution (max.)	2080 x 1544 pixels	2588 x 1960 pixels	2080 x 1544 pixels	2576 x 1932 pixels
Pixel Size	3.45 x 3.45 µm	3.4 x 3.4 µm	3.45 x 3.45 µm	3.4 x 3.4 µm
Binning	2x, 3x	2x, 4x, 6x	2x, 3x	2x, 4x, 6x
A/D Converter	14 bit	14 bit	14 bit	14 bit
Exposure Time	from 0.1 ms to 160 s	from 0.1 ms to 160 s	from 0.1 ms to 160 s	from 0.1 ms to 10 s
Live Frame Rates	7 fps at 2080 x 1544 pixels	9 fps at 2588 x 1960 pixels	7 fps at 2080 x 1544 pixels	9 fps at 2588 x 1960 pixels
	13.6 fps at 1040 x 772 pixels	9 fps at 1292 x 980 pixels	13.6 fps at 1040 x 772 pixels	9 fps at 1292 x 980 pixels
	25 fps at 688 x 514 pixels	33 fps at 640 x 480 pixels	25 fps at 688 x 514 pixels	33 fps at 640 x 480 pixels
		24.5 fps at 424 x 318 pixels		24.5 fps at 424 x 318 pixels
Cooling System	No	No	Peltier 10°C at 25°C ambient	Peltier 10°C at 25°C ambient
External Trigger	No	No	No	No
Data Transfer	FireWire™ IEEE 1394a	FireWire™ IEEE 1394a	FireWire™ IEEE 1394a	FireWire™ IEEE 1394a
Color Profiles	Olympus real time color profiles	Olympus real time color profiles	Olympus real time color profiles	Olympus real time color profiles
Partial Readout	Yes	Yes	Yes	No
Remarks	—	—	· Low image noise with Peltier cooling	· Low image noise with Peltier cooling
Operating System Compatibility	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit

Color and Monochrome Cameras

	DP73	DP80	XC10	XM10 (monochrome only)
Image Sensor	Color CCD	Color CCD + Monochrome CCD	Color CCD	Monochrome CCD
Sensor Type	Sony ICX 274 AQ	Sony ICX 275 AQ + ICX 285 AL	Sony ICX 285 AQ	Sony ICX 285 AL
Sensor Size	1/1.8 inch	2/3 inch (both sensors)	2/3 inch	2/3 inch
Resolution (max.)	4800 x 3600 pixels	4080 x 3072 pixels (color) 1360 x 1024 pixels (monochrome)	1376 x 1032 pixels	1376 x 1032 pixels
Pixel Size	4.4 x 4.4 µm	6.45 x 6.45 µm (both sensors)	6.45 x 6.45 µm	6.45 x 6.45 µm
Binning	2x	2x, 4x	2x, 4x	2x, 4x, 8x
A/D Converter	14 bit	14 bit (both sensors)	14 bit	14 bit
Exposure Time	from 23 µs to 60 s	from 23 µs to 60 s	from 0.1 ms to 160 s	from 0.1 ms to 160 s
Live Frame Rates	15 fps at 1600 x 1200 pixels	15 fps at 1360 x 1024 pixels	15 fps at 1360 x 1024 pixels	15 fps at 1376 x 1032
	15 fps at 800 x 600 pixels	57 fps at 340 x 250 pixels	28 fps at 688 x 516 pixels	28 fps at 688 x 516
	27 fps at 800 x 600 (binning 2x)		50 fps at 344 x 258 pixels	50 fps at 344 x 258
				106 fps at 172 x 129
Cooling System	Peltier 10°C at 25°C ambient	Peltier 10°C at 25°C ambient	Peltier 10°C at 25°C ambient	Peltier 10°C at 25°C ambient
External Trigger	Yes	Yes	Optional	Optional
Data Transfer	PCIe dedicated controller	PCIe dedicated controller	FireWire™ IEEE 1394a	FireWire™ IEEE 1394a
Color Profiles	Olympus real time color profiles	Olympus real time color profiles	Olympus real time color profiles	N/A
Partial Readout	Yes	No	Yes	No
Operating System Compatibility	Windows 7 / 8 / 8.1 64 bit	Windows 7 / 8 / 8.1 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit	Windows 7 / 8 / 8.1 32 bit and 64 bit
Remarks	· Extended dynamic range in DP73WDR model · Fine Detail Processing · 3CCD mode · Progressive readout	· Dual CCD camera · Fast motorized sensor switching · Precise image overlay · Progressive readout · Near-IR sensitivity	· Highly sensitive both in color and monochrome · Optional Trigger and near-IR versions	· Optional Trigger and near-IR versions

Cover page image: YFP-H brain of a 20-week-old mouse treated by New Scale. Courtesy of: Hiroshi Hama, Atsushi Miyawaki, Laboratory for Cell Function Dynamics RIKEN Brain Science Institute.

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