Camera overview

For Life Science Microscopes

OLYMPUS

Your Vision, Our Future

Versatility by design
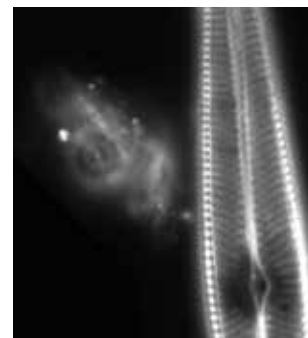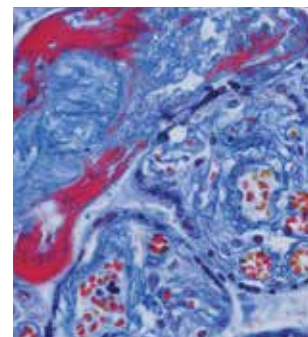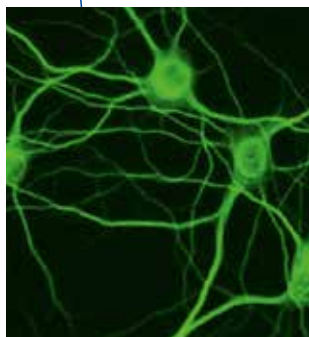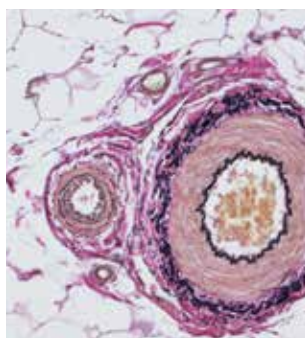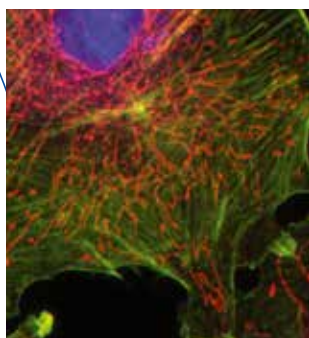
THE FLEXIBILITY OF CHOICE

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 colour fidelity and at other times you'll need pixel-precise monochrome images. 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 image sizes and resolutions, and the Olympus digital microscope camera range really does offer you the flexibility of choice.
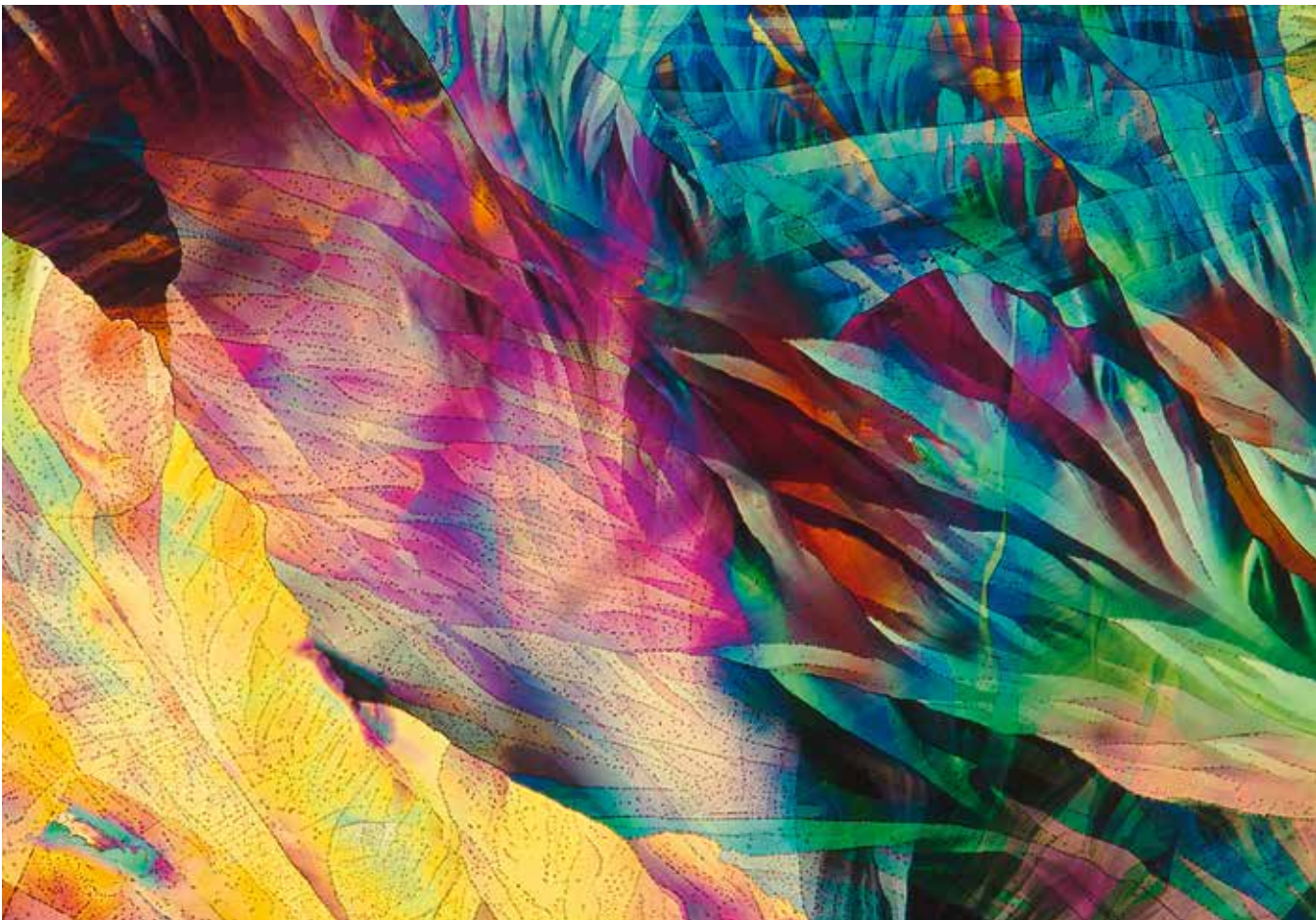
Crystalline structures in polarised illumination.

STAYING IN THE SHADE

Olympus' dedicated colour profiling technologies, implemented across the entire colour camera range, faithfully represent the sample colours, 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 colour

Colour is one of the main methods of differentiating the relevant aspects of a sample. The colours in the sample could be natural or imposed by the research protocol, and the overall balance of the colours 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, colours are captured with the right hue, saturation and intensity as seen through the eyepiece.
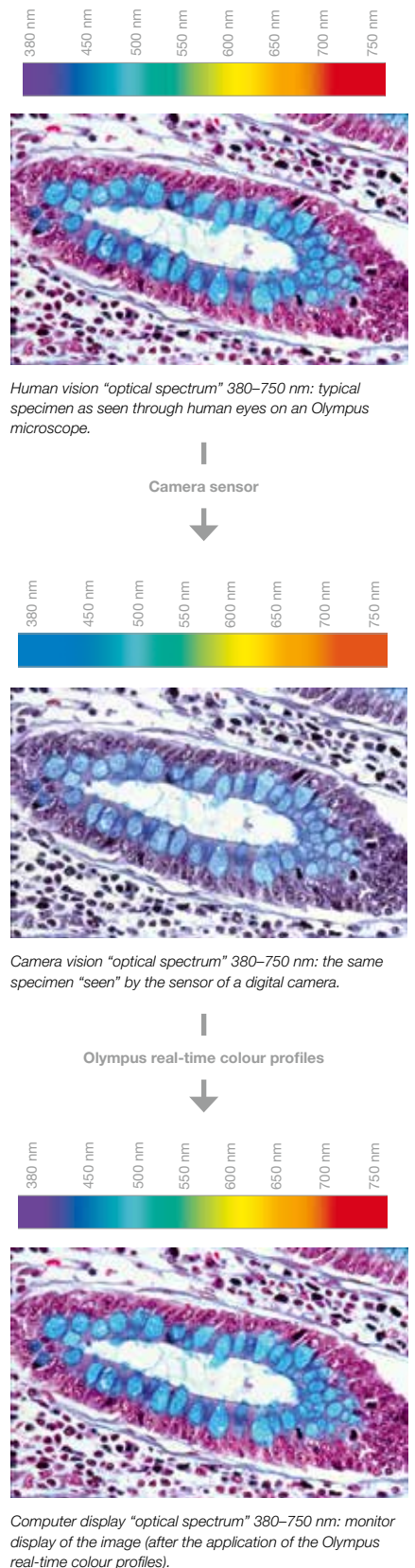
Highest fidelity

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

Real-time, real colour

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

Colour profiles

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

Human vision "optical spectrum" 380–750 nm: typical specimen as seen through human eyes on an Olympus microscope.

Camera sensor

Camera vision "optical spectrum" 380–750 nm: the same specimen "seen" by the sensor of a digital camera.

Olympus real-time colour profiles

Computer display "optical spectrum" 380–750 nm: monitor display of the image (after the application of the Olympus real-time colour profiles).

PERFECT COLOUR MATCH

Colour reproduction presents microscope camera manufacturers with a very complex set of issues. Besides the colour 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.
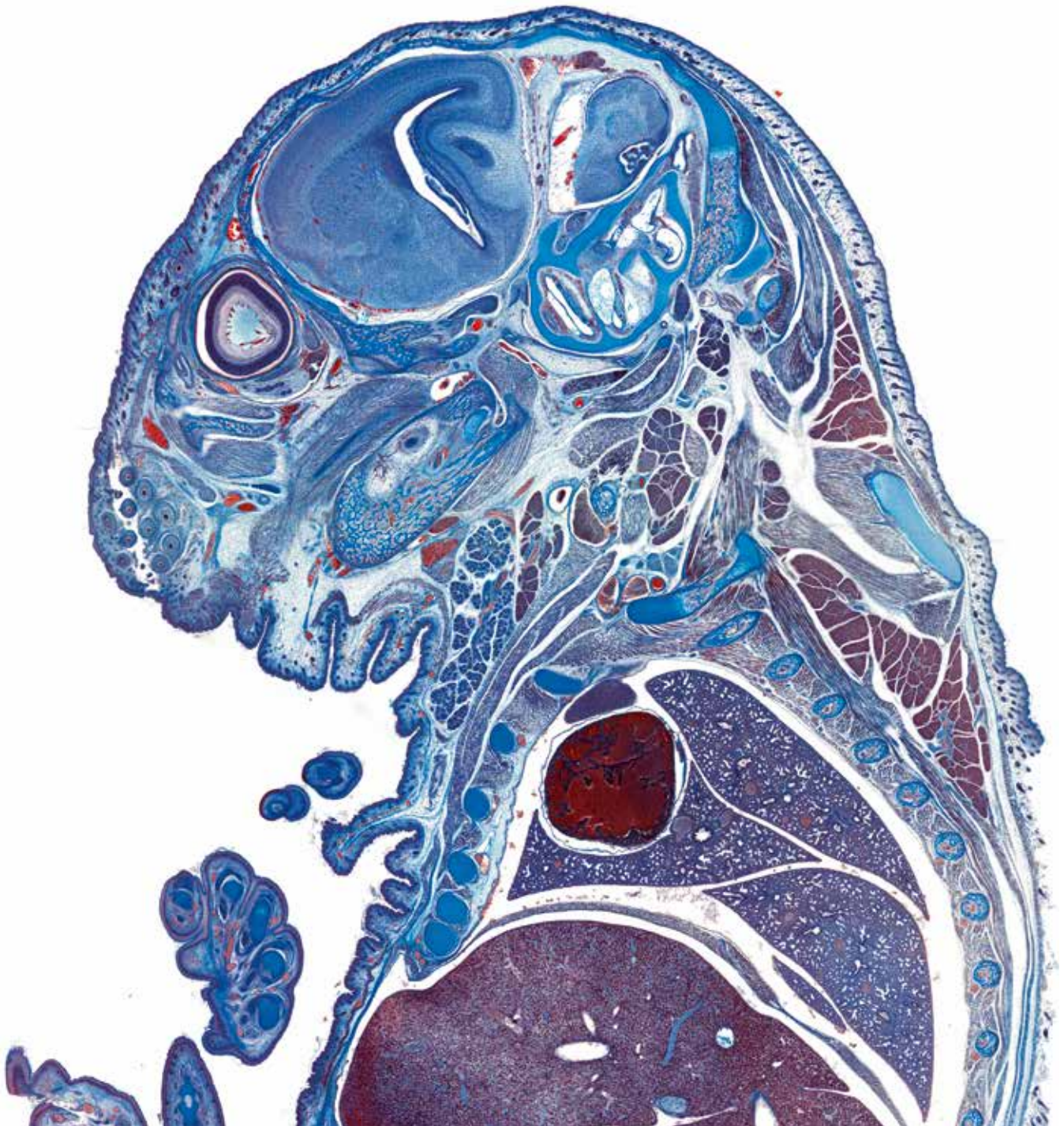
Brightfield panoramic image of an histological section of a rat embryo, processed with MIA (Multiple Image Alignment) software function.

XC30 and XC50

Whether you choose the 3 megapixel XC30 or the 5 megapixel 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 colour 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℃ in standard ambient surroundings, guaranteeing perfect colour images rich in contrast, with excellent colour fidelity and minimal background noise. The cooling also enables a diverse range of exposure times to be covered, maximising 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 Region of Interest (ROI) 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 megapixel cooled colour camera.

XC50: 5 megapixel cooled colour camera.

| Sample | Camera | Monitor |
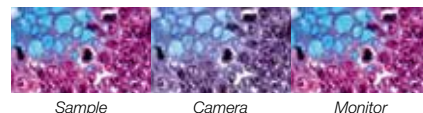
XC30 and XC50 implement Olympus real-time colour profiles.

Algae in darkfield illumination.

Histological section in brightfield illumination.

PERFECT COLOUR MATCH

DP21: 2 megapixel colour camera.

DP26: 5 megapixel colour camera.

Sample   Camera   Monitor

DP21 and DP26 implement Olympus real-time colour profiles.

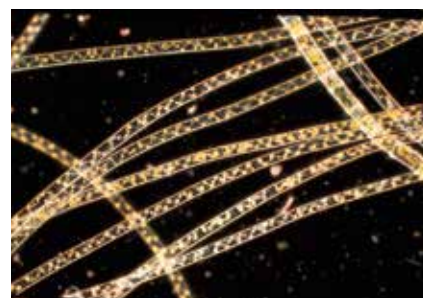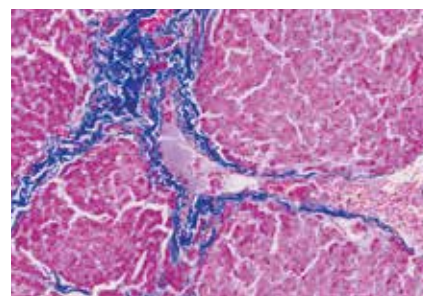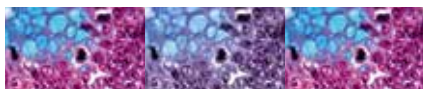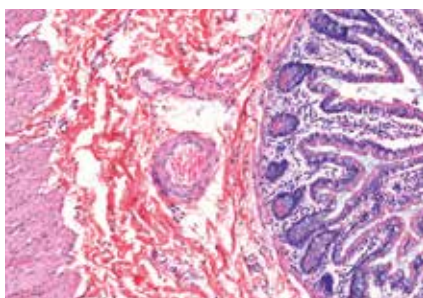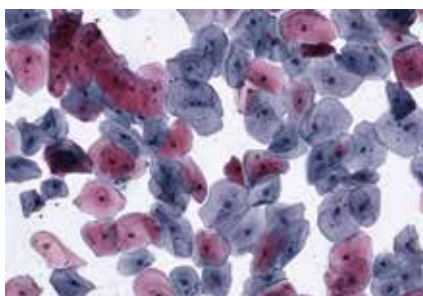*Histological section in brightfield illumination.*

Pap smear in brightfield illumination.

DP21 and DP26

Whether it is the 2 megapixel DP21 or the 5 megapixel DP26, these cameras are ideal for a broad range of clinical, diagnostic and educational applications. A rapid real-time live display, at a constant 15 frames per seconds ensures fluid images with stunning colours and crisp detail.

Naturally live

The DP21 and DP26 are ideal for a wide range of end-users who require a camera for all colour documentation purposes. Thanks to the advanced progressive scan readout a fast, fluid and natural image is always presented during panning and focusing functions alike. In the absence of artefacts such as colour ghosting and image striping, and with a constant speed of 15 fps at standard monitor resolutions, these cameras can recreate on the monitor screen the same experience as when viewing through oculars. This makes the DP21 and DP26 cameras ideal for applications where a real-time and life-like image is required, such as in any micromanipulation procedure, joint discussion or presentations to audiences.

Colourful life

The DP21 and DP26 sensors employ Olympus colour rendering technologies, where subtle colour tones are lifelike and easily distinguishable. In the realm of life science, true colour reproduction is of paramount importance for fast and accurate on-screen sample analysis, assisting immediate sharing and collaboration. When documenting, you can be sure the captured images will precisely represent your sample, with the 5 megapixel DP26 camera particularly beneficial when working at low magnifications.

Eyes on screen

Working at the monitor instead of the oculars has never been so comfortable, accurate and efficient, benefiting a whole range of applications in clinical and research environments. While the expanded screen area of the monitor assists micromanipulation to guide actions in an intuitive manner, faithful colour reproduction and smooth live imaging enables the pathologist to pick out vital details. This on-screen format, combined with a fluid and fast live feed free of artefacts, is especially comfortable for long days of routine sample evaluation, and ideal for sharing for collaborative analysis and training purposes.

Stand-alone option

There are times and places where sample evaluation at short notice is an everyday task. On those occasions having quick and easy access to an imaging system is the first requirement. By using the optional DP21-SAL stand-alone controller the DP21 and DP26 cameras are ready to work in seconds, providing a crisp live image on any connected digital monitor. Measuring and saving then require the clicking of just one button.

DP21-SAL

The DP21-SAL controller converts the DP21 and the DP26 cameras into an instantaneous imaging system, which can be accessed in mere seconds and is optimised 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 your image with the touch of a button. Rich in connections and with a complete range of functions the DP21-SAL controller brings its advantages to many different application scenarios, such as routine work, multiple-observer discussions and shared microscopes. The DP21-SAL will let you shift from using the oculars to the comfortable look of full HD live image on your monitor of choice.

Need connections?

With multiple USB connections, DP21-SAL permits storage of videos 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 optional connection of a USB mouse and keyboard allows rapid menu navigation, precise measurements and direct comment writing on images, if required. Most important of all the DVI interface allows you to directly connect any digital monitor or projector for a full HD live image experience.

Ergonomically easy

The compact controller can be moved to any convenient position on your desk and makes many operations accessible with a single button. The ergonomic layout of the controls makes it easy to instantly capture an image, zoom in and execute a white balance, translating to zero distraction during image analysis. The user interface can be navigated via the controller, or for even faster access, with the optional USB mouse and keyboard. Each controller function can be overlaid on the displayed live image, including a calibrated reference scale for real-time measurements. If an encoded nosepiece is available then precision is automatically maintained, as the actual magnification is directly read from the microscope and the reference scale adjusted in real-time.

Present and discuss

The DP21-SAL stand-alone controller takes full advantage of the DP21 and DP26 progressive live image feed, for fast and fluid panning and focusing. Any monitor or projector can be connected via the DVI-I port, giving you the freedom to choose the ideal output device size for your application, with full HD resolution. This affords maximum comfort together with shared on-screen viewing, ideal for intensive sample browsing, collaborative workflows and prolonged use. Acquired videos and images can also be loaded via USB storage for on-screen viewing, zooming and panning with a single button click.

DP21-SAL: optional stand-alone controller for DP21 and DP26 cameras.
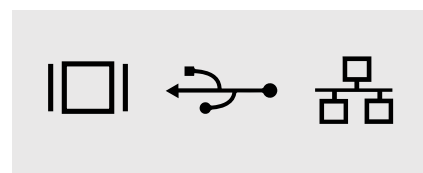
Stay connected: DVI, USB and Ethernet connections included.
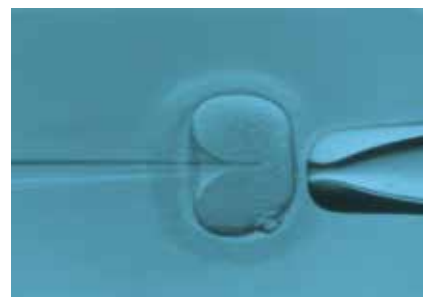
In vitro fertilisation with digital live image, monitor directly connected to DP21 camera using DP21-SAL controller.

PERFECT COLOUR MATCH

UC30: 3 megapixel colour camera.

UC50: 5 megapixel colour camera.

| Sample | Camera | Monitor |

UC30 and UC50 implement Olympus real-time colour profiles.

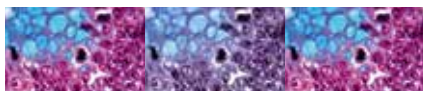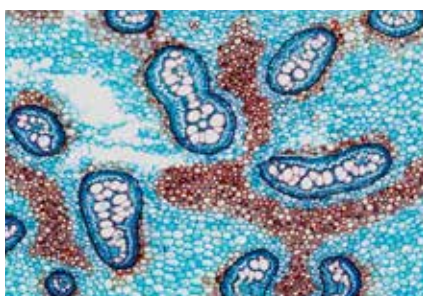*Completely in focus image of an insect, acquired with EFI (Extended Focus Imaging) software function in reflected brightfield illumination.*

Vegetal sample in brightfield illumination.

UC30 and UC50

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

Images through precision

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

Technological flexibility

Both cameras offer the choice of true pixel-binning modes, useful in each 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 megapixel 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 colour 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.

SC30

The Olympus SC30 uses a 3 megapixel sensor, ideal for standard brightfield applications and adapting to digital documentation purposes. In conjunction with its excellent cost-performance ratio, the SC30 is the ideal introductory model for digital image acquisition in light microscopy.

Operational versatility

The SC30 has been designed to provide optimum results in a wide range of applications. Colour fidelity combined with fast live capture enables imaging with great ease. The sensitivity as well as the frame rate can be increased by using various binning modes, leading to easy observation and focusing, with up to 49 fps in 4x binning over a wide range of exposure times.

Easy integration

The SC30 uses the standard C-mount adapter for optical compatibility, and a single high-speed USB 2.0 cable provides both power and data transfer. This ensures straightforward integration of both hardware and software integration into any system. Furthermore, the SC30 is fully supported by the cellSens imaging software environment.

SC100: 10.5 megapixel colour camera.
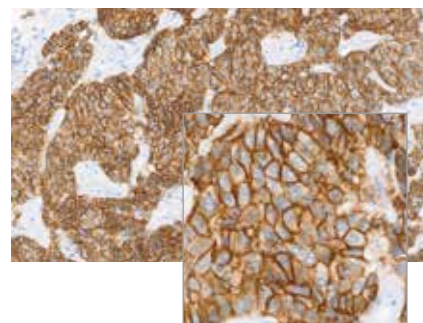
Detail extraction from histological sample in brightfield.

Sample   Camera   Monitor
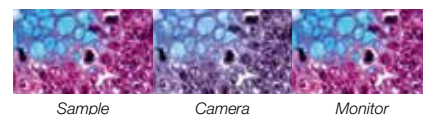
SC100 and SC30 implement Olympus real-time colour profiles.

SC30: 3 megapixel colour camera.
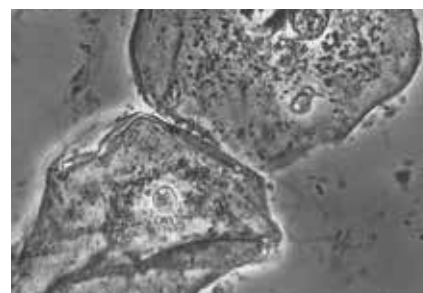
Cell check using phase contrast illumination.

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.
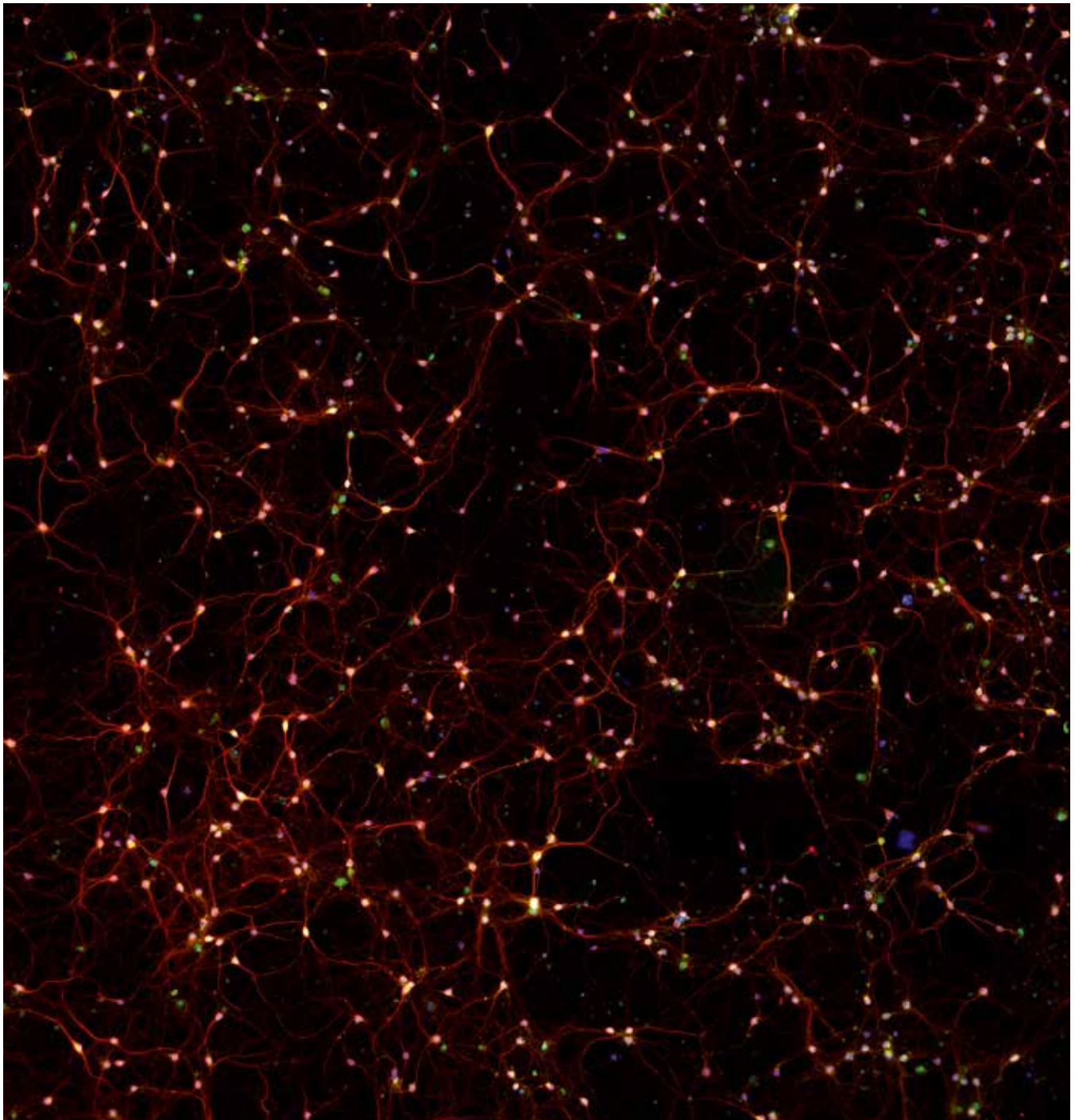
False colour image of a mouse neuronal tissue sample, stained with multiple fluorochromes and processed with Extended Focus Imaging (EFI) software function.

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 chip has a pixel size of 6.45 μm x 6.45 μm, 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 viewfield while conserving highly sensitive fluorescence samples.

Four models

The four different versions of the XM10 are optimised 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 analysed, 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 de-convolution and multi-fluorescence panoramic imaging. Maximum detail is resolved from even the most weakly emitting fluorescence sample.

XM10: 1.4 megapixel cooled monochrome camera.
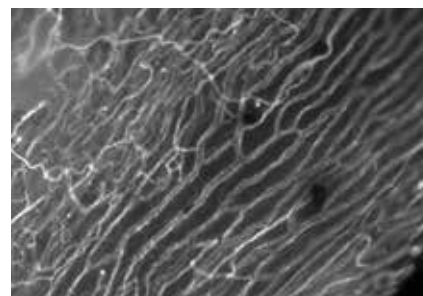
Axon and dendrite morphogenesis during neuronal maturation task.
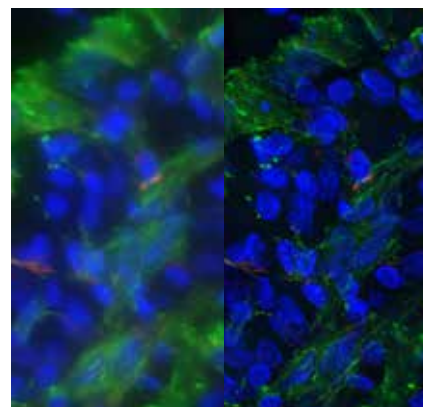
De-convolution (right image) of a gut tissue section stained with multiple fluorochromes.

MULTI-TALENTED ALL-ROUNDERS

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

Stereo microscopy image of a GFP-expressing Drosophila sample, overlay of brightfield and fluorescence images. DP80 pixel-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 multi-talented DP80. Incorporating both a colour and monochrome chip within the same housing, the DP80 camera provides quality imaging for colour and fluorescent microscopy applications alike. The colour chip achieves bright and crisp imaging, complementing the ultra-sensitive photon detection of the monochrome chip. 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 colour documentation, and high-performance fluorescent detection alike. Olympus real-time colour profiles provide lifelike hues while the Olympus Fine Detail Processing algorithm extracts maximum detail in combination with the pixel shifting capabilities of the colour chip. At the same time the high sensitivity up to the near-IR range of the monochrome chip allows for precision imaging of fluorochromes such as Cy7. With exposure settings up to 60 seconds photon detection is maximised for even very faint fluorescent signals. Signal-to-noise ratio is further improved across both chips 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 work-place, the DP80 removes the need to switch camera or optical path, instead seamlessly shifting between monochrome and colour chips in only three seconds. This is easily managed, either automatically or at the click of an icon, and requires no re-calibration of chip alignments, saving valuable time. Readout of both chips is always progressive, for a fast and fluid live image, free of any artefacts like striping and colour-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 colour and fluorescent imaging, with the ability to quickly overlay images derived from both chips. An impressively accurate pixel-to-pixel 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 avenues in the lab and clinic alike, with the confidence of an assured correspondence between colour and fluorescence markers.

Confidence without compromise

Further to cost-efficiency, the DP80 dual-chip 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 with interchangeable functions, without compromising on quality, ease-of-use or performance.

DP80: cooled dual chip camera with 12.5 megapixel (colour) and 1.4 megapixel (monochrome).

Sample   Camera   Monitor
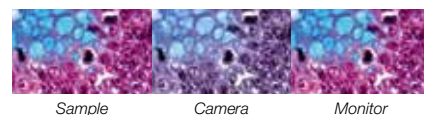
DP80 implements Olympus real-time colour profiles.
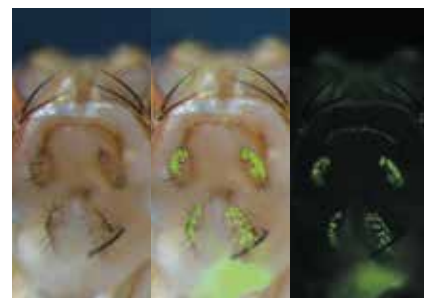
Centre panel shows overlay of colour and monochrome images of GFP expressing drosophila sample. DP80 pixel-precise centring mode and HDR processing of fluorescence image were used.

Image courtesy of Kei Ito, Ph.D.Institute of Molecular and Cellular Biosciences, University of Tokyo.
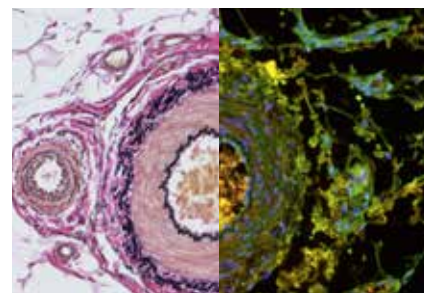
Histological section (left image) of healing tissue also containing CY5 and CY7 labelling of collagen I and III (right image).

MULTI-TALENTED ALL-ROUNDERS

DP73: 17.2 megapixel cooled colour and monochrome camera.

| Sample | Camera | Monitor |

DP73 implements Olympus real-time colour profiles.

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 avenues in precision image capture. Quality is unsurpassed in 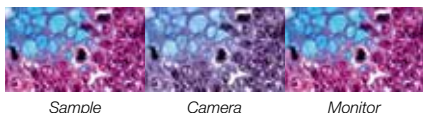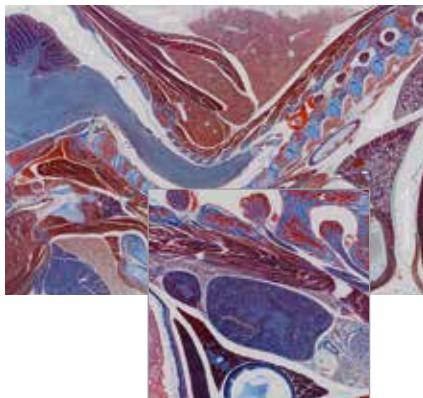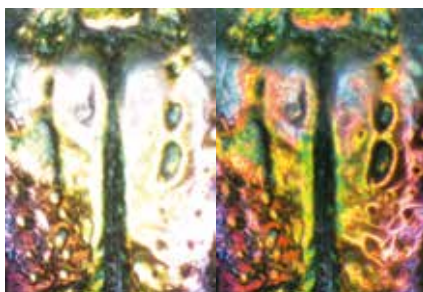documentation and flexibility is provided for fluorescence images, for a truly all-round performance in a variety of applications.

Simply a better image

The 17.2 megapixel 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 neighbouring 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 colour to be measured directly, without any interpolation. The result is an image free from any pixel-shifting artefact and with the colour range usually only obtained by using expensive 3CCD cameras.

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 colour quality, where the Olympus real-time colour profile 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 customise the camera sensitivity to your fluorophore of choice.

DP73WDR: responding to the challenges

It is not uncommon for microscopy samples to present wide variations in brightness, challenging the camera 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.

XC10

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

Fast, smooth and sensitive

The powerful cooled sensor chip offers the clarity of 14 bits per colour 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 colour 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 colour or fluorescence imaging techniques.

Chilled

The Peltier-cooled sensor maintains a temperature of 10°C (at ambient temperature), enabling this multifunctional camera to provide colour and black-and-white images that are rich in detail and contrast, with extraordinarily low background noise. The extensive exposure time range (from 100 µs 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

Additionally the XC10 is available in other three versions dedicated to maximise 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 megapixel cooled colour and monochrome camera.

| Sample | Camera | Monitor |
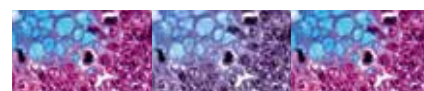
XC10 implements Olympus real-time colour profiles.
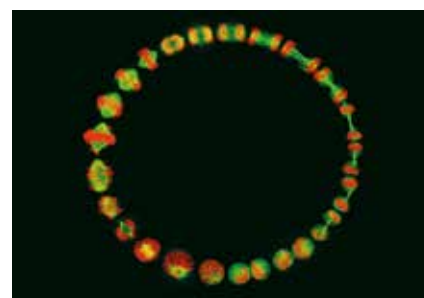
Sequentially recorded cell cycle.

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

Colour cameras

	DP21	DP26	SC30	SC100
Image sensor	Colour CCD	Colour CCD	Colour CMOS	Colour CMOS
Sensor type	Sony ICX 274 AQ	Sony ICX655AQ	MT9T001P12STC	Aptina MT9J003
Sensor size	1/1.8 inch	2/3 inch	1/2 inch	1/2.3 inch
Resolution (max.)	1,600 x 1,200 pixels	2,448 x 1,920 pixels	2,048 x 1,532 pixels	3,840 x 2,748 pixels
Pixel size	4.2 x 4.2 µm	3.45 x 3.45 µm	3.2 x 3.2 µm	1.67 x 1.67 µm
Binning	2x	2x	2x, 3x, 4x	2x
A/D Converter	12 bit	12 bit	10 bit	12 bit
Exposure time	from 50 µs to 8 s	from 50 µs to 8 s	from 60 µs to 1,75 s	from 0.12 ms to 14.6 s
Live frame rates	15 fps at 1,600 x 1,200	7 fps at 2,448 x 1,920 pixels	10 fps at 2,048 x 1,532 pixels	3 fps at 3,840 x 2,748 pixels
	27 fps at 800 x 600	16 fps at 1,224 x 960 pixels	28 fps at 1,024 x 768 pixels	12 fps at 1,920 x 1,374 pixels
		16 fps at 612 x 480 pixels	37 fps at 680 x 512 pixels	42 fps at 960 x 686 pixels
		31 fps at 320 x 240 pixels	49 fps at 508 x 384 pixels	
Cooling system	n/a	n/a	n/a	n/a
External trigger	n/a	n/a	n/a	n/a
Data transfer	FireWire™ IEEE 1394a/b	FireWire™ IEEE 1394a/b	USB 2.0	USB 2.0
Colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles
Partial readout	No	Yes	No	No
Remarks	· Stand-alone option	· Stand-alone option	· Convenient USB interface	· Single-shot 10 megapixel
	· Progressive readout	· Progressive readout		· Convenient USB interface
Operating system	Windows 8 32bit and 64bit	Windows 8 32bit and 64bit	Windows 7 32bit and 64bit	Windows 7 32bit and 64bit
	Windows 7 32bit and 64bit	Windows 7 32bit and 64bit		

	UC30	UC50	XC30	XC50
Image sensor	Colour CCD	Colour CCD	Colour CCD	Colour 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.)	2,080 x 1,544 pixels	2,588 x 1,960 pixels	2,080 x 1,544 pixels	2,576 x 1,932 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 2,080 x 1,544 pixels	9 fps at 2,588 x 1,960 pixels	7 fps at 2,080 x 1,544 pixels	9 fps at 2,588 x 1,960 pixels
	13.6 fps at 1,040 x 772 pixels	9 fps at 1,292 x 980 pixels	13.6 fps at 1,040 x 772 pixels	9 fps at 1,292 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
Colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles
Partial readout	Yes	Yes	Yes	Yes
Remarks	—	—	· Low image noise with Peltier cooling	· Low image noise with Peltier cooling
Operating system	Windows 8 32bit and 64bit	Windows 8 32bit and 64bit	Windows 8 32bit and 64bit	Windows 8 32bit and 64bit
	Windows 7 32bit and 64bit	Windows 7 32bit and 64bit	Windows 7 32bit and 64bit	Windows 7 32bit and 64bit

Colour and monochrome cameras

	DP73	DP80	XC10	XM10 (monochrome only)
Image sensor	Colour CCD	Colour CCD + monochrome CCD	Colour 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.)	4,800 x 3,600 pixels	4,080 x 3,072 pixels (colour)	1,376 x 1,032 pixels	1,376 x 1,032 pixels
		1,360 x 1,024 pixels (monochrome)		
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 1,600 x 1,200 pixels	15 fps at 1,360 x 1,024 pixels	15 fps at 1,360 x 1,024 pixels	15 fps at 1,376 x 1,032
	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
Colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles	Olympus real-time colour profiles
Partial readout	Yes	No	Yes	Yes
Remarks	· Extended dynamic range in DP73WDR model	· Fast motorised sensor switching	· Highly sensitive both in colour and monochrome	· Optional Trigger and IR versions
	· Fine Detail Processing	· Pixel precise image overlay	· Optional Trigger and IR versions	
	· 3CCD mode	· Dual CCD camera		
	· Progressive readout	· Progressive readout		
		· Sensitive up to near-IR		
Operating system	Windows 8 64bit	Windows 8 64bit	Windows 8 32bit and 64bit	Windows 8 32bit and 64bit
	Windows 7 64bit	Windows 7 64bit	Windows 7 32bit and 64bit	Windows 7 32bit and 64bit

The manufacturer reserves the right to make technical changes without prior notice.