Get highest resolution at speed

ZEISS Axiocam 820 color

Your Sensitive 20 Megapixel Microscope Camera for Demanding, True Color Imaging of Large Fields of View

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Seeing beyond

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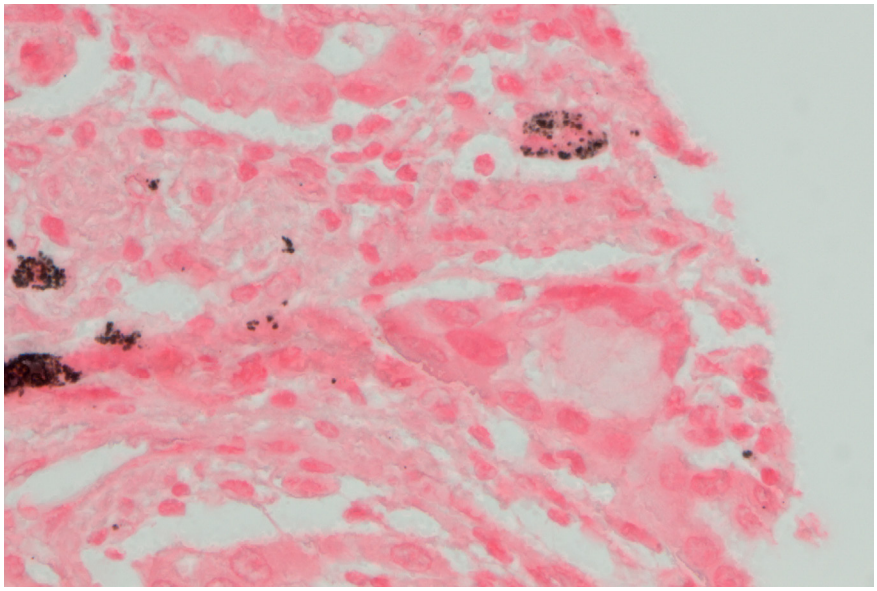
The ZEISS Axiocam 820 color was designed as the most flexible solution for complex experiments and demanding applications. Its square sensor utilizes the optical field of view of the microscope most efficiently without compromising resolution or speed. The 28 frames per second full resolution speed allows imaging processes without losing resolution at all magnifications. For imaging the fastest processes, the acquisition speed can be further improved by binning pixels or by using a sub-array of the sensor. Distortion-free image acquisition is guaranteed because of the global shutter architecture.

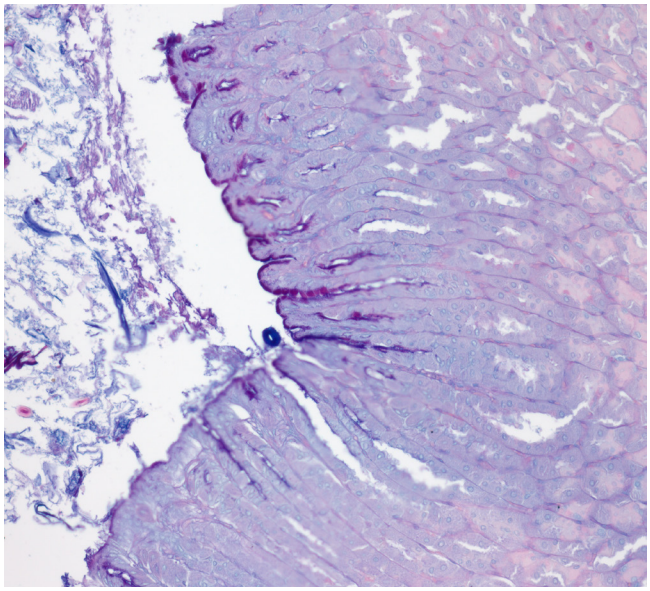


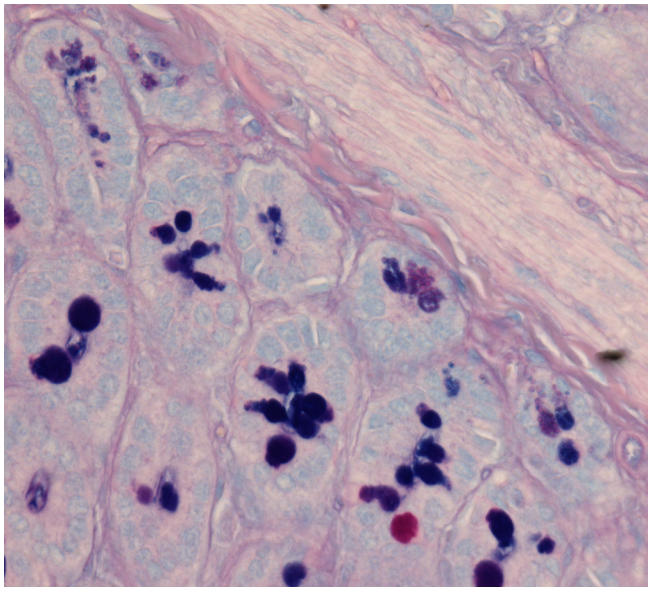
Anthracosis with focal areas of carbon pigment deposits (black) in human cancer tissue (red). Sample courtesy: A. Feuchtinger, Helmholtz Zentrum München, Germany

The camera delivers a 30 frames per second live image for navigation with the PC that is as smooth as looking through the eyepieces. The finest details over a large area can be captured at all resolutions due to the small 2.74 µm pixel size of this high-resolution 20 megapixel sensor. And the sensor size of 17.5 mm diagonal allows for fast image acquisition of large sample areas by reducing the number of tiles required. This increases your workflow efficiency and significantly improves sample throughput.

The ZEISS Axiocam 820 color has perfectly linear signal response for accurate quantification of intensities. The excellent dynamic range of the camera can be improved further by using the exclusive high dynamic range (HDR) mode for imaging both the dimmest and brightest details in one image.

Because the ZEISS Axiocam 820 color combines a large sensor, excellent sensitivity, high resolution, and fast acquisition speeds, it provides the performance and flexibility to conduct even the most challenging experiments. It's the perfect choice for demanding color imaging in cytology, pathology, and materials research.

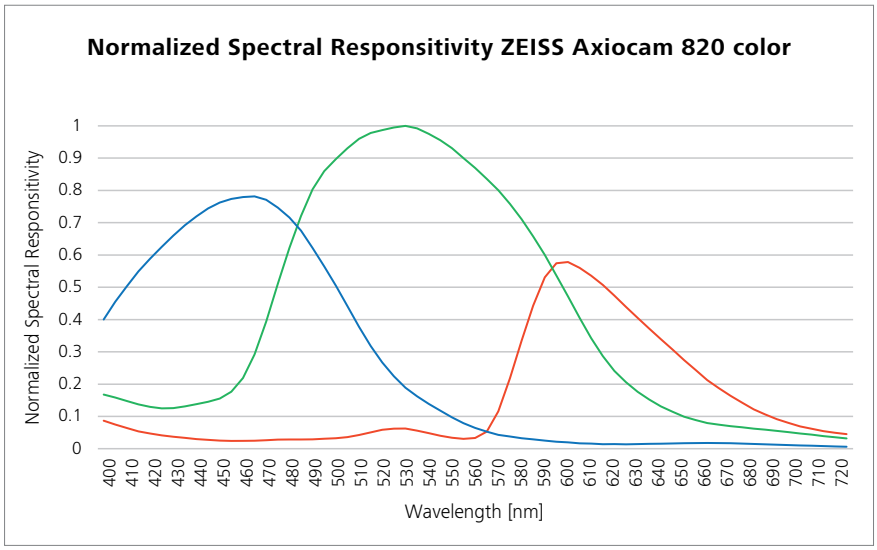




Mouse intestinal goblet cells with neutral (red) and acid (blue) mucine staining imaged with 20x/0.5 (left) and 63x/1.2W (right) objective.
Sample courtesy: A. Feuchtinger, Helmholtz Zentrum München, Germany

Simpler. More intelligent. More integrated.

- 20 megapixel square CMOS sensor with 17.5 mm diagonal
- 28 full-resolution color images per second
- Small 2.74 micron pixels for resolving the finest details at all magnifications
- High-quality noise inhibition technology
- Global shutter architecture for distortion-free images
- Best-in-class color rendition
- Color and monochrome imaging modes
- 30 frames per second of the entire field of view in live image mode
- Reproducible image quality due to active thermal stabilization of the sensor
- Robust, very fast and easy-to-use dual USB 3.0 connection
- Dynamic range of 1:25,000 in high-dynamic range (HDR) mode
- Hardware triggering



Recommended for:

- The most demanding color applications in life sciences, materials research and geoscience
- Co-observation with a fast, high resolution, live image in high quality color with a very large field of view
- Large sample area imaging in pathology, cytology, and materials samples
- Fast tile scanning applications
- The broadest range of intensities and exposure times

Technical Data and Conformity

Feature	Value
Sensor Type	Sony CMOS image color sensor, global shutter architecture
	Backside illuminated
Sensor Size	Image Diagonal 17.5 mm, equivalent to 1.1" Sensor Format
	Image Field 12.4 mm × 12.4 mm, square imaging area
Sensor Pixel Count	4512 (H) × 4512 (V) = 20 Megapixel
HW Subsampling	2256 (H) × 2256 (V) = 5 Megapixel, high speed full view mode
Pixel Size	2.74 µm × 2.74 µm
Bit Depth	14 bit / 12 bit or 8 bit / pixel
Exposure Range	0.1 ms up to 60 s
Gain	1×, 2×, 4×, 8×, 16×
Binning	1×1, 2×2, 3×3, 4×4, 5×5 (combined analog and digital binning)
Dark Current Signal	< 0.1 e-/p/s at 25°C sensor temperature
HDR Mode	Extended dynamic range up to 1:25,000
Cooling System	Active cooling, regulated sensor temperature 25 °C
Spectral Sensitivity	Appr. 400 nm – 720 nm, IR cut filter (coated)
Interfaces	Dual USB 3.0
Trigger Port	Connector for trigger cable: Trigger-in, trigger out, ready
Power Supply	By USB 3.0 connections, power consumption 7 W max.
Operation System	Win 10 ×64 Enterprise
Software	ZEN 3.6 (blue edition) and higher, ZEN core 3.5 and higher
Image Enhancement Functions	Denoising, sharpening, shading correction, dark current compensation
Automatic Feature	Optional automatic exposure time adaption
Optical Interface	C-Mount
Dimensions and Weight	10.8 cm × 7.8 cm × 6.1 cm / 620 g
Order Number	Axiocam 820 color: 426560-9180-000

Frame Rate	FPS
Live Image	30 (subsampling mode)
4512×4512	28
2256×2256	75 (2×2 subsampling, full field of view)
1920×1080	110
1024×1024	115
512×512	207
1920×256	346
1920×128	447

Read Noise (gain)	Full Well Capacity	Dynamic Range
2.3 e- (1×)	10,000 e-	4,440:1
1.8 e- (2×)	5,000 e-	2,720:1
1.6 e- (4×)	2,500 e-	1,540:1
1.5 e- (8×)	1,250 e-	850:1
1.3 e- (16×)	625 e-	470:1
HDR mode	10,000 e-	25,000:1

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