APEX CAMERAS FOR DIGITAL PATHOLOGY

Prism-based 3-CMOS cameras for digital pathology delivering images with supreme color accuracy, high resolution and high sensitivity.

Digital imaging is today a vital element in the field of anatomical and clinical pathology helping health professionals to improve disease diagnostics and general health checks, but also helping researchers in laboratory environments to study the functional and structural changes taking place in cells and tissues during disease.

In recent years the field of digital pathology (where trained pathologists look at human tissue whole slides and cell samples under a microscope) has become more and more digitized and automated, using high quality/high resolution color imaging techniques, and image analysis software.

When color stained tissue biopsy samples and cell cultures are digitally captured using a microscope or whole slide scanner, they become available to be numerically analyzed using advanced computer algorithms. Digital pathology can for example help to automate manual counting of cells and structures or for classifying the condition of tissue helping to improve the accuracy of disease diagnostics.

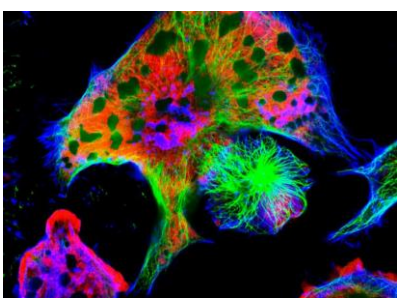
An important part of the pathology process is the color staining of tissue and biopsy tests, as different colored cells (as well as fluorescence techniques) can reveal various signs of diseases. Automated digital imaging workflows have also made it possible to effectively carry out larger screening programs of entire populations, with the aim of analyzing and detecting early signs of cell changes, thereby preventing a serious disease to evolve.

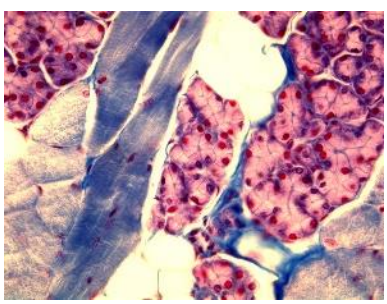
Other advantages include digital storage for educational and scientific research purposes.

In all of the above mentioned digital pathology application examples, high quality and high resolution color images are an important and very central element for digital pathology to show its full potential.

JAI's Apex Series consists of a range of high sensitivity 3-CMOS prism-based area scan cameras designed to deliver supreme color images improving the diagnostics process in a range of fields both in clinical pathology and also in anatomical pathology including surgical specimens and skin pathology.

The JAI Apex Series is an excellent choice for OEM integration into medical equipment in the field of pathology. Please turn page to read more about the Apex camera models.





JAI Apex Series 3-CMOS area scan cameras are an excellent choice for OEM integration into digital patholgoy tissue scanners. Turn page to learn more about the Apex cameras.

See the possibilities

Apex Series: 3-CMOS prism-based area scan cameras for life sciences.

JAI's new Apex series cameras are low noise, high sensitivity prism R-G-B color area scan cameras with 3 x 3.2 megapixels resolution (AP-3200T-USB-LS) and 3 x 1.6 megapixel resolution (AP-1600T-USB-LS). They offer a rich feature set for supreme color imaging in various aspects of digital pathology imaging. The cameras are designed with a three-way prism that uses dichroic filters to separate the incoming light into red, green and blue wavelengths, which are directed to three precisely aligned CMOS sensors. The prism technique provides better R-G-B color accuracy, differentiation, and spatial precision than traditional color cameras based on the Bayer mosaic technique. The full color information provided in every pixel is ideal in demanding ophthalmology imaging where supreme color discrimination (for detecting subtle color nuances) and spatial resolution are key factors in disease diagnostics and research.

Supreme color differentiation:
Digital pathology examination often require the ability to distinguish specific color shades in stained biopsy tissue samples, cell cultures or pap-smear cell tests etc. in order to improve disease diagnostics.

JAI's 3-CMOS prism camera technology provides better color separation than the interpolation/estimation of colors as found in cameras using Bayer color interpolation. Color differentiation is also increased due to the steeper spectral curves of the dichroic prism filters which results in smaller areas of "crosstalk" between color channels and thus, more certainty through the full light spectrum. These higher levels of color differentiation and dynamic range mean better performance in digital pathology systems.

High sensitivity:
In most life science imaging applications it is essential that the camera can capture as much light as possible to produce bright images showing all details.

The prism glass in JAI's microscopy cameras offers better light transmission properties than the polymer filters on a standard Bayer sensor. This boosts the sensitivity and helps to produce bright images.

Color Enhancer tool:
Apex Series cameras can be made to "boost" the intensity of a specific color when needed for specific applications. Six different primary/complementary colors (red, green, blue, cyan, magenta, yellow) are available for enhancement using a built-in Color Enhancer function. Each color can be amplified up to 2 times its normal intensity to make certain items "stand out", such as the red color of blood vs. surrounding tissue.

Edge Enhancer tool:
This image processing filter can identify the boundaries between contrasting colors and then increase the contrast in those areas, thereby improving edge sharpness and definition of small details in for example tissue slices.

Highest levels of dust/FOD suppression:
All Apex LS models provide exceptional image quality for most medical and life sciences applications, but some applications call for an even higher grade of image clarity, and here the LSX models are recommended. The Apex LSX models are all pre-screened to offer minimal levels of image artifacts from dust/FODs, providing maximum image quality for the most demanding life sciences and microscopy applications.

APEX SERIES:

- ✓ **AP-3200T-USB-LS / LSX***
- ✓ 3 x 3.2 MP CMOS
- ✓ 38 fps over USB3 Vision
- ✓ IMX265

- ✓ **AP-1600T-USB-LS / LSX***
- ✓ 3 x 1.6 MP CMOS
- ✓ 79 fps over USB3 Vision
- ✓ IMX273

**) Pre-screened "LSX" models offer minimal levels of image artifacts from dust/FODs*

DOWNLOAD WHITE PAPER:
Learn how using the unique advantages of 3-CMOS prism technology helps you to achieve superior image quality factors, such as real and full-color depth, improved color contrast, and better color differentiation.

Camera technology from JAI

JAI offers a broad range of high quality industrial camera technology for integration into our customers' vision inspection systems, serving a wide range of industries such as life science, medical, pharmaceutical, semiconductor, automotive, food, sports/entertainment and more.

Please contact JAI for a more detailed discussion of your camera needs for imaging in medical and life sciences applications and read more about JAI and our camera offerings on **www.jai.com**

Apex Series
3-CMOS area scan cameras providing better color fidelity and spatial precision than traditional Bayer color cameras.

Go Series
Megapixel area scan cameras with small dimensions, high frame rates and cutting edge sensor technology.

Spark Series
Advanced area scan cameras delivering high resolution, high frame rates, and high image quality.

Sweep Series
Monochrome & trilinear CMOS line scan cameras with high resolution, fast scan rates and high image quality.

Sweep+ Series
Prism-based color line scan cameras combining highest color precision, fast line rates and multi-spectral options.

Fusion Series
Dual-sensor area scan cameras with unique capabilities for specialized multi-spectral and HDR imaging applications.

Wave Series
InGaAs dual-band line scan cameras capable of sensing Short Wave Infra-Red (SWIR) light. (900-1700 nm).

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