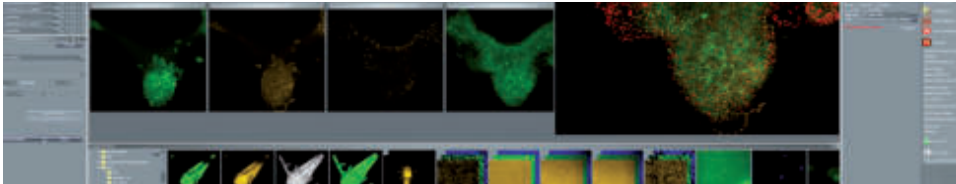# VisiView® 7.x

Imaging Software for Life Science Research

VisiView® is a high performance imaging software from Visitron Systems GmbH for BioMedical applications. Our intuitive software is designed as an integrated imaging software which includes comprehensive microscope control, extensive control of peripheral devices, image acquisition, analysis and documentation. Its multitasking ability supports realtime image handling and processing up to 6D multidimensional acquisition. The VisiView® software represents the philosophy of simple operation and seamless integration of applied standards.

Independent
advanced
imaging and
microscopy solutions
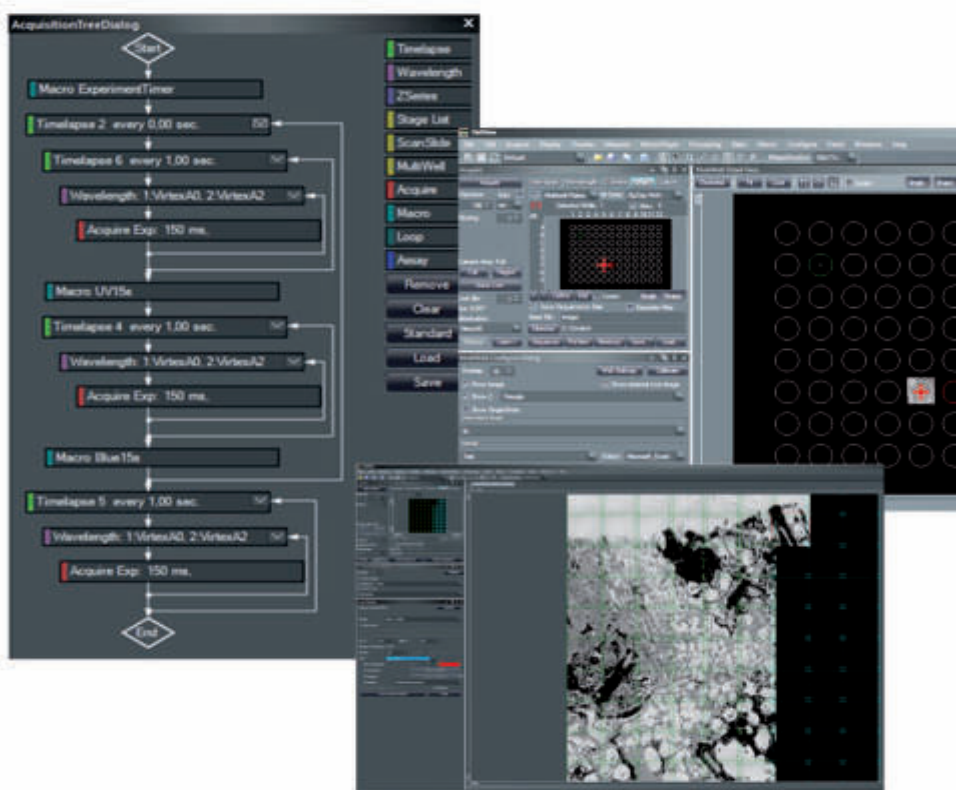
New Device Support:

- » DeepSIM technology Crest
- » Open Frame microscope - Cephla, Prior Openstand, Zaber Nucleus
- » Confocal Support - Yokogawa CSU, Hamamatsu Maico, Crest V2-V3-Cicero, AUROX
- » Lumencor ZIVA confocal laser illumination
- » New camera models from Exelitas/PCO, Hamamatsu, Tucson, Fluoca, ...
- » Simultaneous Camera support of different manufacture models and CCD/sCMOS format up to 4 by ViRTEx experiment control

New Application and Device Support

VisiView® continuous Software development

In 2007 we have installed out first VisiView Imaging software at the Charité University Hospital in Berlin, that's closed to 20 years ago. Compare to this time, we have dramatically improved VisiView by functionality, features, reliability, device driver development and application modules. Today we are proud that meanwhile thousands of worldwide scientist using VisiView daily as the working tool in Life science research and application.

New Application:

AI Artifical Intelligence Option:

The VisiView AI is imbedded in the multidimensional processing and object analysis module.

AI Image Restoration

Pre-trained AI Image Filters for Denoising, Debluring and Image Enhancement.

Easily train your own models that do segmentation for object analysis

Segment some images of your series manually to train the network

Feedback Microscopy by AI

Upgrade of application modules:

- » Scan Slide - Stiching and scanning of multiple images
- » Screening - Automatic Scanning of Multiwell Plates
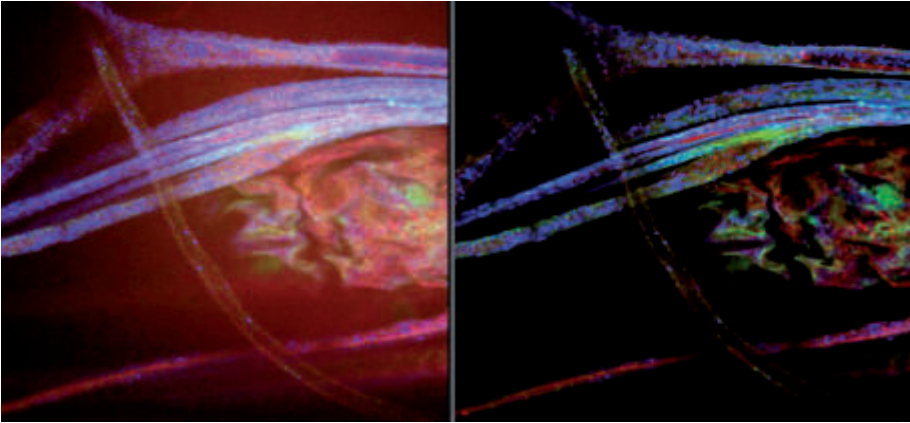- » SRRF - Superresolution by radial fluctuation implementation

Figure 1: Multicolor Drosophila Embryo

VisiView® AI Artifical Intelligence Filter Option - Pre-trained neuronal models for image enhancement: - Denoise - removes noise from fluorescent images


Deep Learning Approaches in Microscopy with VisiView® Imaging Software

Deep learning using convolutional neural networks in microscopy applications opens up a new dimension in pattern recognition, image enhancement and object segmentation where classical methods come to their limits. We are excited to share this new VisiView feature with scientists in life science research. Even where the human eye reaches its detection limits, the AI technology outperforms the traditional image analysis by improving resolution and segmentation.

Latest Features:

VisiView® App

AI - Artifical Intelligence
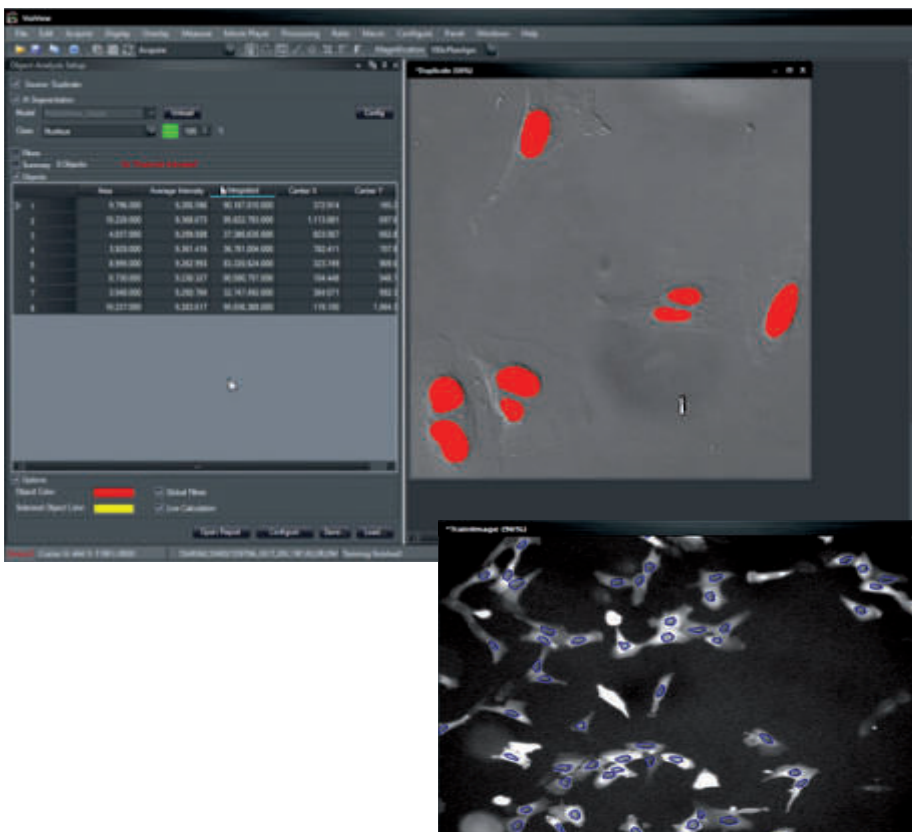

AI Morphometry

Trainable AI moduls for automated segmentation and morphometry, requires the object analysis option.

Sample Scanner

Large scale sample preview and graphical stage navigation. Preselection of custom regions for tile scanning. High scan speed and precision thanks to "ViFoc-Adapt" focusing technology. It requires the Scan Slide option.

Connection Windows

Clear arrangement of connected images. Simplified and advanced Image Overlay.
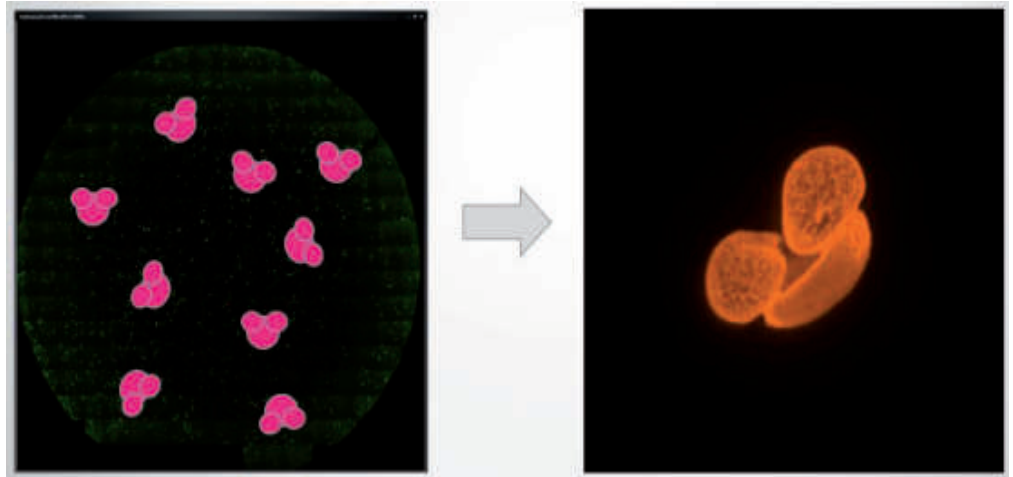
Feedback Microscopy in VisiView: Revolutionizing Smart Imaging

VisiView's Feedback Microscopy, also known as „Smart Imaging," empowers researchers to design and execute microscopy experiments with unprecedented precision and efficiency. Tailored for the scientific community, this advanced feature within the VisiView imaging software optimizes experimental workflows by integrating real-time analysis and adaptive control, delivering high-quality results with minimal resource expenditure.

Key Advantages of Feedback Microscopy:

» **Targeted Experiment Design:** Feedback Microscopy enables researchers to create highly focused experiments by leveraging intelligent algorithms to define imaging parameters. This ensures that only the most relevant data is captured, aligning experiments with specific scientific objectives from the outset.

» **Real-Time Analysis and Adaptation:** During the experiment, VisiView analyzes data in real time, dynamically adjusting the imaging process based on the acquired information. This adaptive approach optimizes experimental conditions on the fly, ensuring precise data collection without unnecessary iterations.

» **Enhanced Efficiency:** By intelligently prioritizing essential data, Feedback Microscopy significantly reduces acquisition time and data volume. This streamlined process minimizes storage requirements and accelerates experimental throughput, allowing researchers to focus on analysis rather than data management.

» **Simplified Post-Experiment Analysis:** The real-time optimization of Feedback Microscopy eliminates redundant data, making post-experiment analysis faster, simpler, or even unnecessary in some cases. This allows researchers to derive meaningful insights quickly and efficiently, accelerating scientific discovery.

Why Choose VisiView's Feedback Microscopy?

For researchers seeking to push the boundaries of microscopy, VisiView's Feedback Microscopy offers a powerful tool to design smarter experiments, reduce acquisition times, and simplify data analysis. Whether you're investigating complex biological systems or conducting high-throughput imaging, VisiView empowers you to achieve your research goals with greater accuracy and efficiency.

Discover the future of microscopy with VisiView's Smart Imaging—where precision meets productivity.
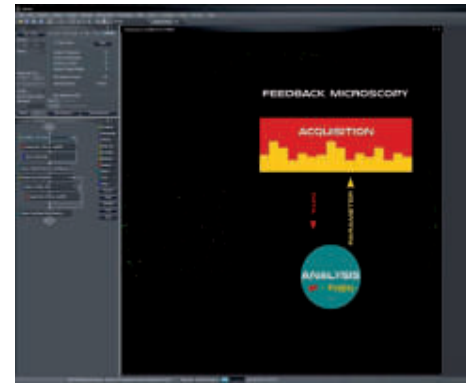

How It Works Feedback Microscopy

Feedback Microscopy in VisiView integrates advanced image processing and machine learning algorithms to monitor and analyze microscopy data as it is acquired. By identifying key features or patterns in real time, the software dynamically adjusts imaging parameters—such as focus, exposure, or region of interest—to optimize data quality. This closed-loop system ensures that experiments are continuously refined during execution, maximizing efficiency and precision.

Latest Features:

VisiView® App

Feedback Microscopy
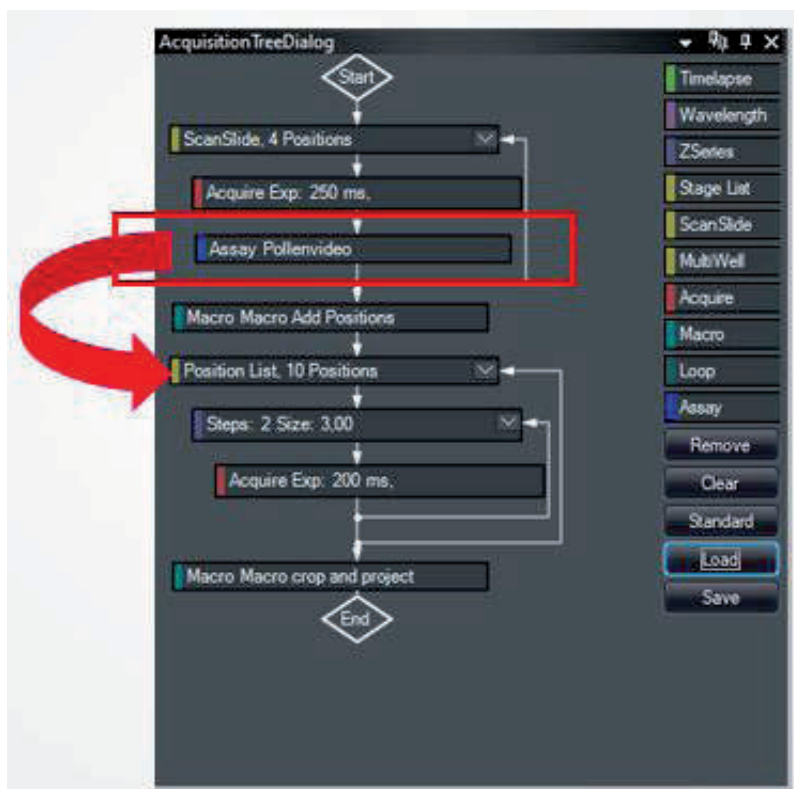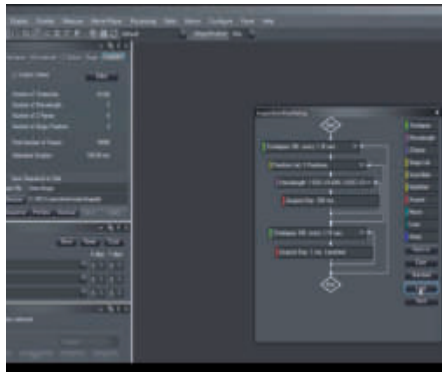
Acquisition Tree Dialog

Large improvement is the new design of the acquire tree dialog

You can add acquisition nodes to the Acquisition tree with simple drag and drop as before, but now the nodes are shown as color coded cards with a straight hierarchy. Feel free to arrange the nodes according to your preferred experimental setup. There are almost no constraints left. Loops created by loop nodes like timelapse are clearly shown in a flow chart. This is also new. All imaging parameters are directly editable in the node. The whole tree including macro nodes and their code can be stored in or loaded from setting files as before. Also new is the assay node. An assay node runs a predefined object analysis on the just acquired data. The assay result can be displayed in a table. The assay is also available for the Scan Slide and Multiwell Screening Options.

Latest Features:

Custom Acquire with new GUI graphical Editor

Customized Acquisition Sequences

The new graphic sequence editor allows you to create your own acquisition sequences. Select the Custom tab in the Acquire dialog and click Editor.

The legacy layout for the Custom Acquisition protocol setting is line-based text. The new option is a flow-chart layout.To select your choice: Check or uncheck Use Legacy Custom Acquisition Dialog in Configure->System.
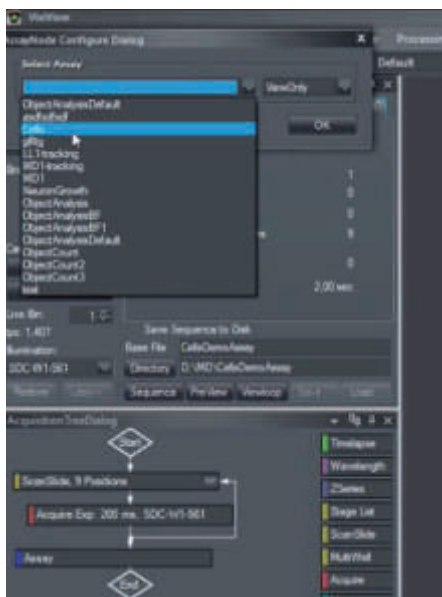
Assay Node Configuration
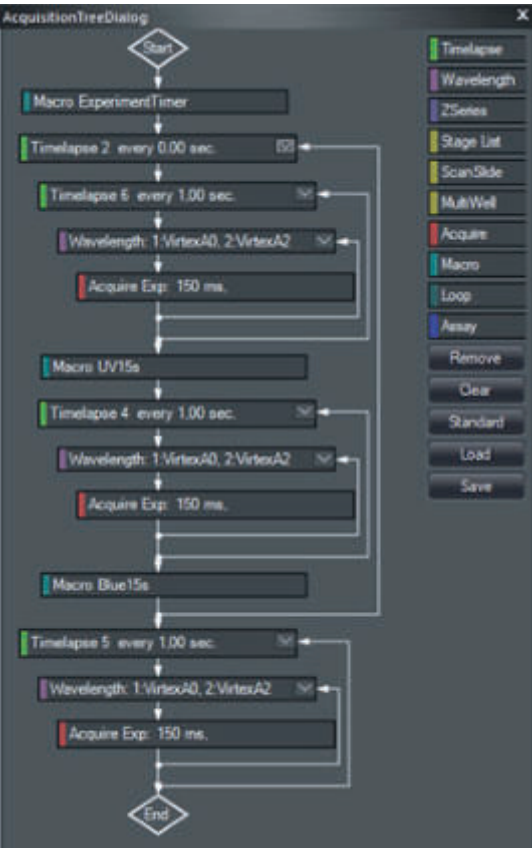
SMLM -Single Molecule Localisation Microscopy

Single Molecule Localisation Microscopy is a Super Resolution technique that enables a lateral resolution of up to 20 nm. Through stochastic activation of single fluorophores and the precise localization of its position a super resolved image can be reconstructed. The sparse activation of single molecules is actively controlled by VisiView through regulation of the activation laser power. The recorded signals are analysed in realtime to identify single molecules and to display a reconstructed super resolution image.
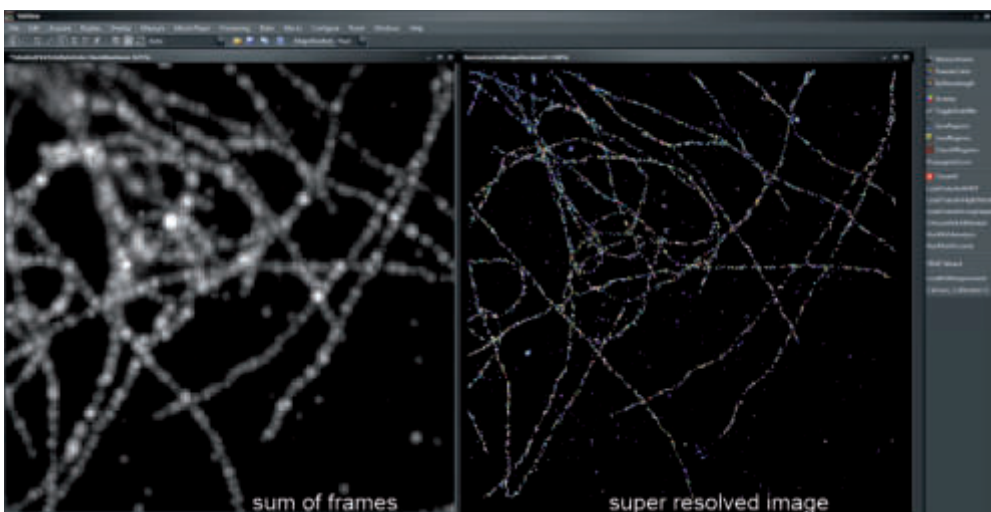
What is Single Molecule Localisation Microscopy?

Single Molecule Localisation Microscopy is the generic term for a series of techniques that use the same principle to resolve structures beyond the diffraction limit of light. The principle relies on sparsely and iteratively activating single molecules in densely labelled samples to localize single point emitters. The fitted positions of these emitters are then used to reconstruct a super-resolved image. Depending on the technique, single molecule blinking is achieved either by photo-switching and -activating of fluorescent proteins (PALM) or organic dyes (STORM) or by transiently hybridizing dye labelled DNA strands to complementary strands coupled to the protein of interest via antibodies (DNA-PAINT).
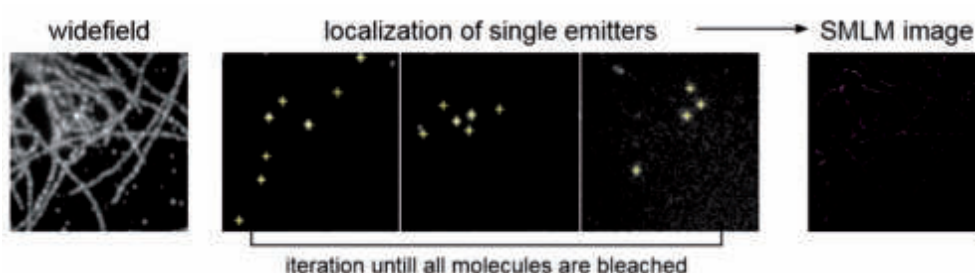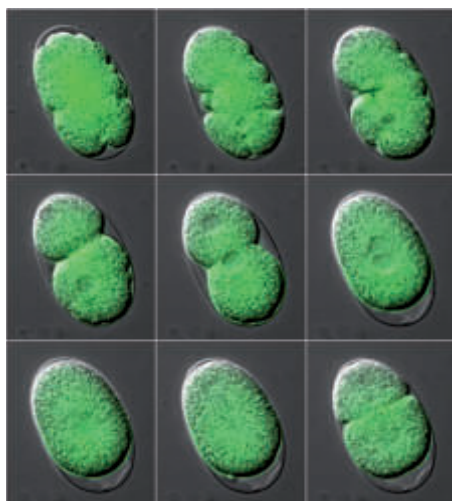
Latest Features

Super-Resolution-System

based on SMLM Technology

sum of frames | super resolved image

Visiview STORM option e.g. with QUICKPALM reconstruction of AF647 labelled tubulin

widefield | localization of single emitters → SMLM image

iteration untill all molecules are bleached

Time-Lapse Acquisition

Acquire changes in living specimens over time at defined intervals and display the image sequence as a movie to show cellular dynamics. The image sequence will be saved in single TIFF, multifile stack or .nd format.

Device Stream Acquisition

Give your research a competitive benefit by speeding up your acquisition!

Our advantage is to control illumination devices e.g. high speed illumination systems, AOTF or z-piezo focus systems between the frame transfer or interline shift time of the CCD camera. The image sequences can be continuously acquired without time delay.

Acquisition of images using automated microscopes and peripherals

Image analysis begins with accurate acquisition. The VisiView® software supports a wide range of digital color or black/white scientific grade cameras, automated microscopes and other microscope peripheral devices. Display and scaling of high-dynamic images up to 16bit is possible.
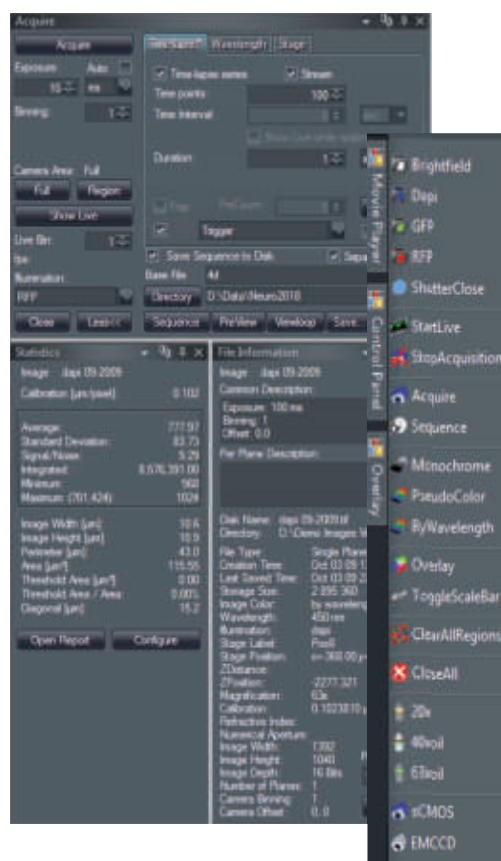
Single or Multichannel Acquisition

Don`t miss a detail!

The MDA - Multi Dimensional Acquisition gives you a comprehensive view of your multi dimensional experiment. This means a free combination of z-stack (focus), different wavelengths (channel), time points and different xy stage positions in one sequence acquisition (6D-imaging).

Control of Automated Microscopes

No limits! Design your experiment for your needs.

The scope control allows you to control all motorized microscopes from any vendor. We have easy access to any illumination component like filter cube changer, shutter or condenser control. The objectives can be easily selected and calibrated. The focus control allows both the automatic generation of Z-stack images and the software autofocus readjustment to keep your cells in best focus.

## Automate with Macro and Toolbar

Reproducible and easy to use!

The VisiView® software offers convenient customized toolbars and easy control of system settings and Python macro functions. It is perfect for frequently performed operations. The macro menu covers all functions for automation, commands and sequences.

Control of motorized XYZ-Stage

In order to acquire at different stage positions you will need a motorized scanning table as well as the VisiView stage control option. You can define multiple stage position and use them for a multi dimensional acquisition experiment in combination with time-lapse, multi-color and Z-stack.

Scanning of Multiwell Plates

The scanning technique can also be used for scanning multiwell culture plates with different sizes like 6-, 12-, 24-, 96 well formats. In addition, high magnification sub-scanning within a single well is supported. To review images, the standard display mode is used with easy hot-key selection of multi-stage-positions, zoom and movie function.
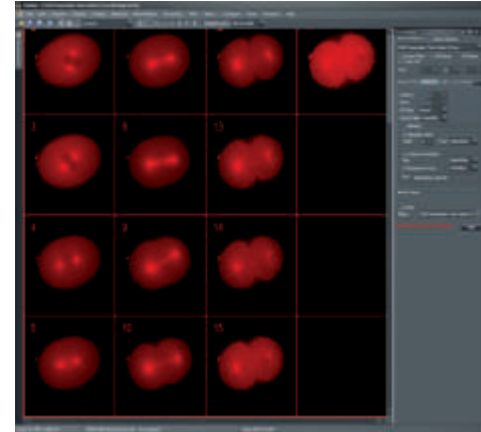
Scan certain positions of your specimen or multiwell culture plates in just one process. Use highly precise motorized XY-stages synchronized with the acquisition cycle at maximum speed. Observe multicolour fluorescence with up to 4 cameras at the same time to get maximum time resolution. VisiView grows with your demands.

Acquisition of images developed for analyzing large areas

Simultaneous Image Acquisition:
Up to four Cameras in Multi-Camera Mode

Four Cameras – in live image displays, who can do this?
Beside the control of multiple cameras from different vendors or models within one PC, VisiView supports up to four cameras from the same model in simultaneous mode. This allows the observation of e.g. four different fluorochromes at the same time. As a result the negative effects related to sequential image acquisition, like time delay between colors, are avoided.
This function is perfectly suited for performing highly reliable ion measurements with emission ratio dyes (e.g. indo-1, cameleon), FRET or performing colocalisation studies.


SplitView Analysis

Allows the on-line division of images acquired with an optical image splitter, which is mounted in front of the CCD camera. This replaces time consuming post-processing and enables on-line analysis of emission ratio experiments.

Create AVI Movies

Easily convert sequences files e.g. stack image format into AVI video format for easy presentation.
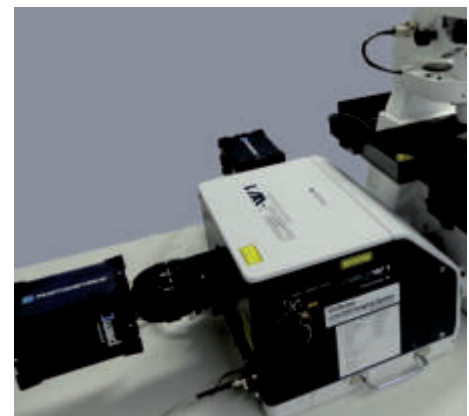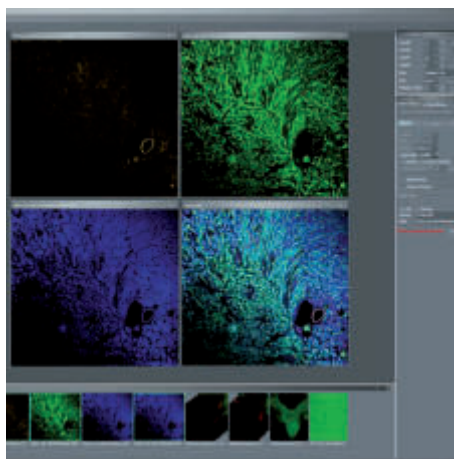
Merge Color Channels

Combine several color images to get the complete picture.
The overlay module allows to merge multiple fluorescent, bright-field, phase contrast or DIC images into a color composite image. Up to 7 channels are available. If a channel is optically shifted, the xy pixel alignment compensates the shift.

Colocalization

Colocalization refers to the observation of the spatial overlap between two different fluorescent labels, each fluorescence image having a separate emission wavelength. To see the differences located in the same area or very near to one another, VisiView® calculates the area, gray value etc. of the image and reports it into Microsoft® Excel or text file.

Measure, process and analyze your images including AI filter e.g. Noise removal, Blur or Scattered Light

Get more information from your image with the measurement, processing and analysis tools of our Visi-View® software. Calibrate the size and measure the brightness over time for individual regions. Align and calculate sequences of images to improve the result. Report the image values into a customizeable spreadsheet format for further analysis.
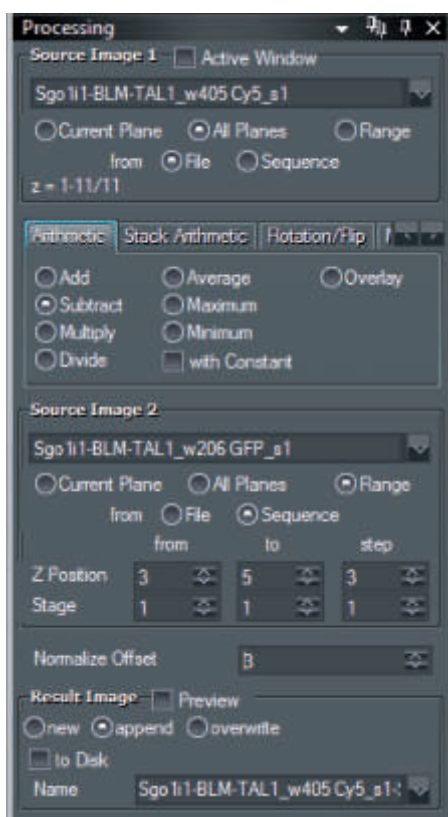
Pseudo-Color or Wavelength Calibration

Each acquired image can be automatically assigned to a wavelength via the illumination control dialog. For the selected fluorescence filter, an emission wavelength e.g. for EGFP - 525nm will be chosen. The image will be automatically displayed in green and the overlay option will recognize the correct color.

Statistic

The statistics menu indicates image or region information within the active window. Features comprise calibration size µm/pixel, average, standard deviation, signal/noise, integral, min/max, perimeter, area µm² and diagonal µm.

Measurement

The measurement option offers comfortable evaluation of image data by statistical processing, line scan graph, intensity over time graph and histogram display.

Processing and Analysis

The processing and analysis option offers comfortable processing of single or complex MDA - Multi-Dimensional image data, analysis and archiving of image sequences. All analysis values can be reported into a text file or directly into Microsoft® Excel.

Line-Scan Analysis

The Line Scan feature gives you a one-dimensional intensity distribution for the line region that is shown within your image. The y-axis shows the intensity values and the x-axis shows the position values. The x-axis values represent calibrated distance.

Histogram Analysis

The Histogram feature gives you graphical distribution of the frequency of the intensity values. The total area of the histogram is equal to the image brightness.

Montage - Tiling Display

For display of acquired sequences e.g. time-lapse or z-axis stacks, usually a montage display is used. This option is included in the processing menu. Free selection of columns, rows, fill order, separator lines etc. can be chosen for best overview.
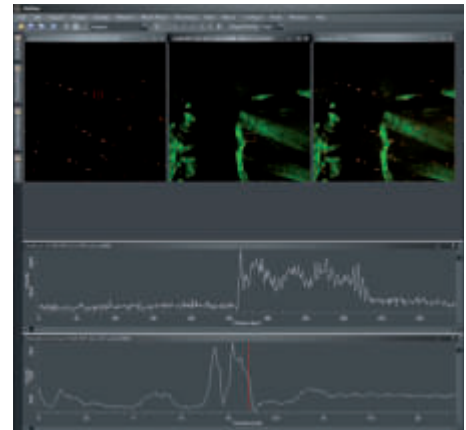
Quantitative image analysis usually starts with image acquisition and ends with the presentation of measured results. VisiView® offers a comprehensive set of tools including image scaling, rotation, calibration, background subtraction, shading correction, color changing and adding a scale bar.

Measure, calibrate, stitch, rotate and threshold your images

Calibrate Distance within Images

With the calibrate dialog you can calibrate existing images or the acquisition system, which means that future acquired images will be calibrated automatically. The objective calibration is done via the magnification setup. If an automated microscope is used, the system will change automatically depending on the objective lens in use.

Dynamic Scale Bars

Use the scale bar during a running experiment. Even if you zoom or bin the image, the scale bar displays the correct calibrated values. The scale bar is variable in size, color, description and position and can be easily stamped into the final documented image.

Region Measurements

The region measurements function is an easy tool for manual region measurements by combining multiple parameters. Regions are available as line, circle, square and polygon. To document your work, regions can be stored and easily transferred to other images or stacks.
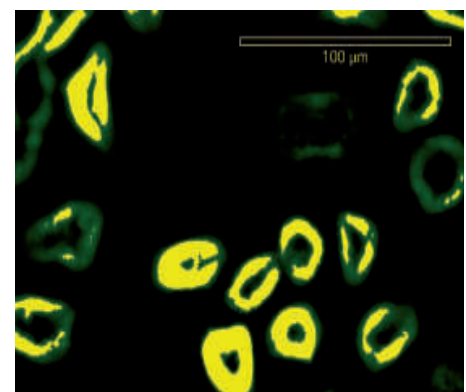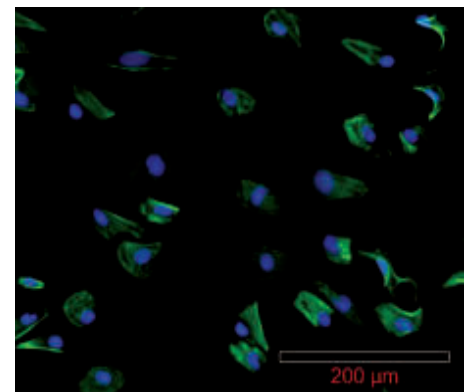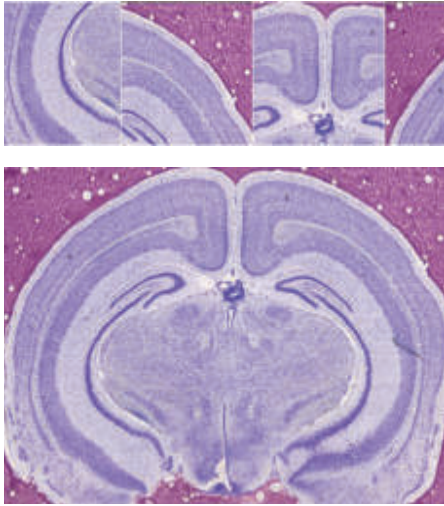
Scan Slide Module

Scanning your specimen with VisiView® is a very easy three-step procedure. The first step of the acquisition process (which only needs to be performed once) is the auto-calibration of the setup. The second step is the definition of the scanning area and the third step is the scan itself.

Already during the scan the result is directly displayed in an overview image.

The scan area can be defined by marking the upper left and the lower right corner. VisiView®'s Live View Mode helps you to find and set the positions of interest in your sample.

Upon starting the scan, single images are acquired and tiled to a high-resolution image of the entire specimen.

Automatic scanning of the sample improve throughput, extend overview, allows repeating analysis

The Scan Slide Module generates a comprehensive view of specimens, which exceed the conventional field of view. This is achieved by automatic scanning of a user-defined sample area and subsequent image stitching. Precise stitching algorithms assure maximum accuracy of these high resolution images.

Scan the whole area of your specimen or multi-well culture plate in just one process. Use highly precise motorized XY-stages synchronized with the acquisition cycle for maximum speed.


Auto-Calibration

In order to obtain the best results, the system needs to be perfectly calibrated. This procedure is usually performed once during the installation of the microscopy setup and does not need to be repeated unless integral parts are exchanged.

In VisiView® the calibration process is quiet, simple and fast. One needs to mark an object in the middle of a Live image and start the calibration. VisiView® then automatically measures the camera angle and the system magnification in order to determine the precise image xy calibration.

## Stitching of Multiple Images

Analysis of large surfaces requires to scan the area of the specimen. The acquired multiple images can then be automatically stitched to an ultra high resolution image during acquisition or afterwards in the post-processing. Two different algorithms are available: A fast and a slow high-precision one. Typically, a 10% overlap of the scanned images is used to achieve best results.
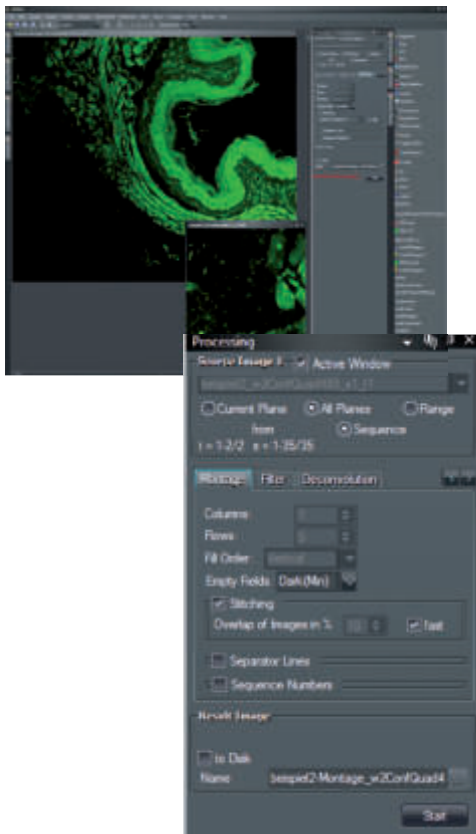
Quick overview with Scan Slide technique

A new function of the Scan Slide Module is based on the combination of low- and high-power objectives. In a first step a tile-scan is performed with a low-power objective (5x or 10x) in order to produce an overview of the whole sample. The user is now requested to select an area of interest on this image, which is subsequently scanned at higher resolution with a high-power objective.

Importantly, the XY displacement and the exact magnification factors of the two objectives in use are automatically measured and taken into account during this process.
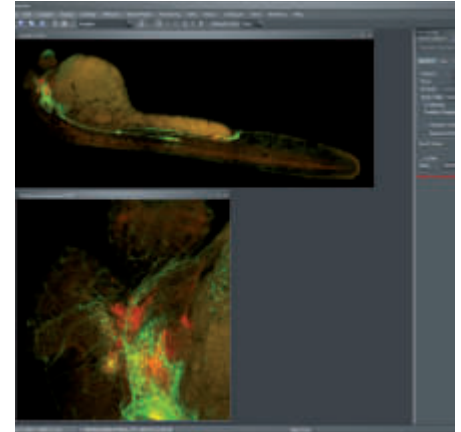
**Scan Slide with Time-Lapse, Multicolor and Z-Stacks**

The scanning routine of the Scan Slide Module can be easily used as part of more complex experiments to offer the best flexibility. Watch your specimens grow in time-lapse experiments. Obtain stitched images from multiple fluorescence channels, e.g. showing proteins of interest and tissue-specific markers. And get comprehensive 3-dimensional datasets by combining the XY scan with Z-stacks.

Scan Slide in all dimensions
XY combined with time-lapse, multicolor and Z-Stack

Scan Slide - Scanning of free surfaces

Some specimens with an irregular shape, e.g. tilted, long and thin, would require very large (rectangular) scanning areas and the resulting stitched image would contain large empty regions. Therefore, VisiView offers a special version of the Scan Slide Module, which allows to scan free-form surfaces and is based on the combination of low- and high-power objectives.

In a first step, a low-power objective is used to produce a tile-scan overview of the sample. The user can now draw a free-hand region to exactly trace the outlines of the area of interest. In a third step, this region is scanned at high resolution with a high-power objective.
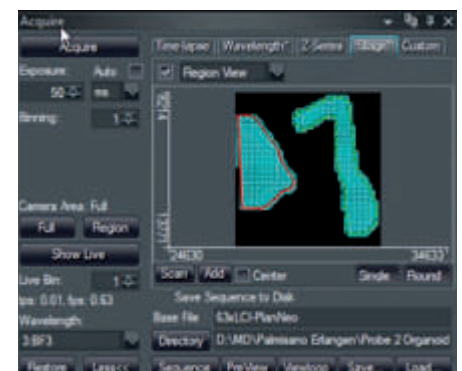
Scan Slide - Focus Adaption

If the focus changes over the area to be scanned, then it is possible to define focus anchor points. While the mouse cursor in within the anchor point, use the mouse wheel to adapt the focus position until the live image is in focus. To do this at different positions of the overview image it will reate a color map indicates the interpolated focus positions
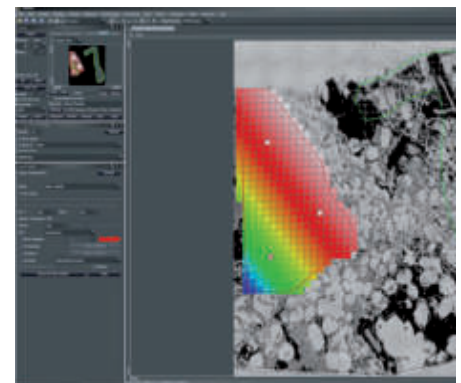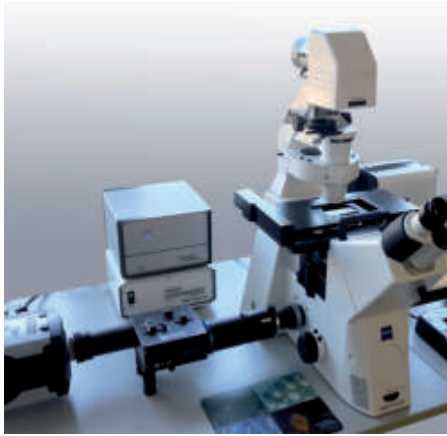
Realtime Ratio Module

All in one

The requirements of biomedical research in cell biology are continuously growing and getting more complex. This process is challenging the development of imaging software in microscopy. The VisiView® software designed by microscopy specialists offers seamless integration of hardware. The flexibility and clear menu structure helps for easy operation. A modular architecture allows the extension with new or additional application modules like Ratio, FRAP, FRET, structured light Confocal etc.. A simple solution with powerful functions to meet you demands for the application.

Realtime Ratio
Investigate changes in fluorescence intensities in your cells

Measure
calcium concentration and pH value and visualize intra- and intercellular processes

The Ratio Option of the VisiView® is specially designed for on-line ratio applications like dual wavelength intracellular measurements such as Fura-2, BCECF, FRET or single wavelength dyes, calcium green, fluo-3, etc.. The ratio option provides a simultaneous display of the original wavelength, e.g. 340nm, 380nm, ratio and the corresponding intensity graphs. Either intensities over single or multiple regions of interest are selectable. VisiView suppors beside high speed Polychromtor also the new LED 340/380 and VIS illumination.
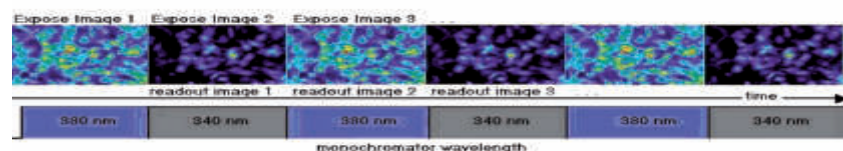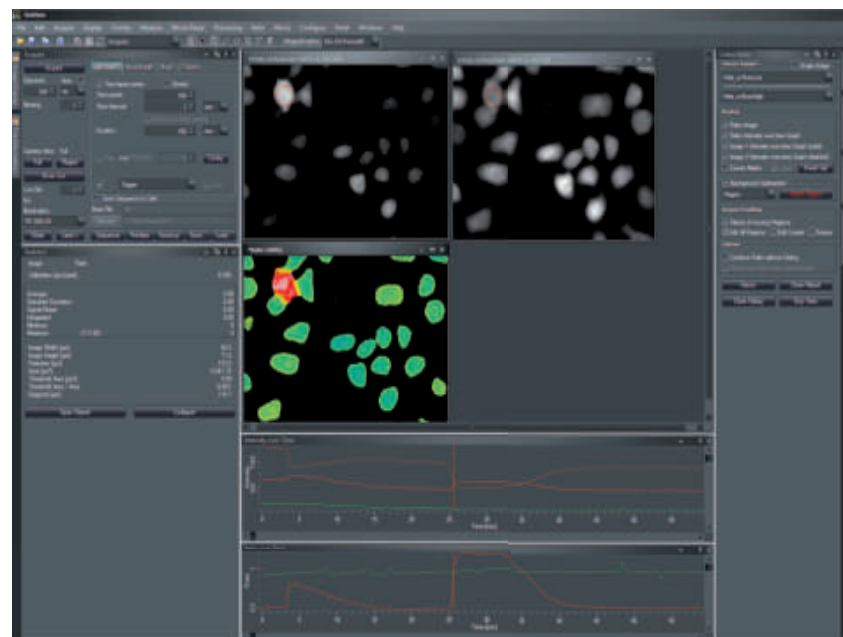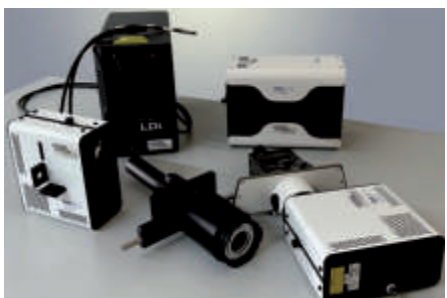
Realtime 5D Viewer

Real-time Developmental Biology

The VisiScope 4Elements allows multi-dimensional experiment control. The VisiView 5D Viewer offers a glimpse into 3D data even before z-stack acquisition is completed. Complete 5D dataset, including stitched data, can be visualize post acquisition.

Key Features:

» Realtime 3D Visualization
» Multi-Channel overlays
» Time series
» Cut plane, xy, xz, yz, free orientation
» Measurements/Analysis
» 3D ROI / VOI - region of interest and volumes of interest
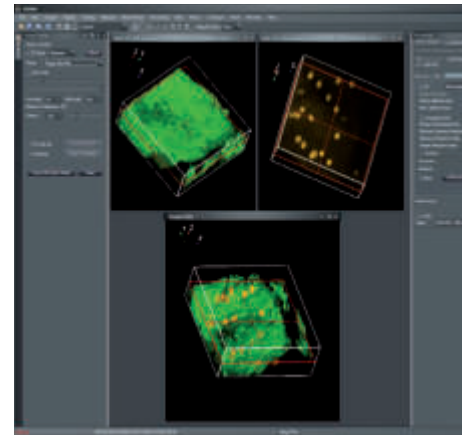
The Visitron Systems ViRTEx technology, provides sophisticated electronic for experiment control where highly accurate timing is essential. Typically it is used in Confocal, FRAP and TIRF experiments.

All of these applications need fast and highly accurate TTL synchronization of scientific interline, frame-transfer or sCMOS cameras with illumination devices like Poly-chromator, LED or laser systems. Furthermore for precise Z-stack 3D image acquisition, highly accurate Z-Focus Piezo control is required.

The ViRTEX synchronization improves the accuracy of 5D image acquisition.

Realtime Processing Option

Real-time correction of image data

The VisiView Realtime Processing option enables a preview mode in the Processing menu (see also deconvolution chapter) and the correction of image data in real-time!

It supports various arithmetics, filters and 2D deconvolution algorithms known from the VisiView Processing menu. Whatever filter is applied neither the frame rate of the acquisition drops nor the raw-data are modified. It can be activated in the Image Display menu as it, like any setting of the Image Display menu, solely modifies the data visualisation.
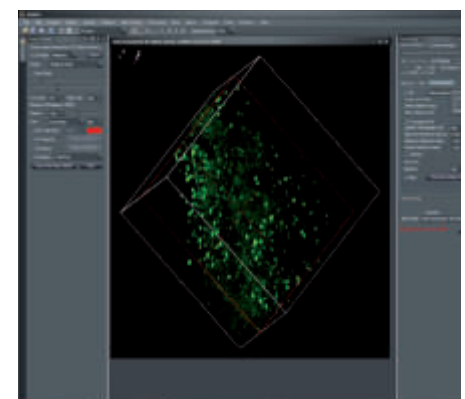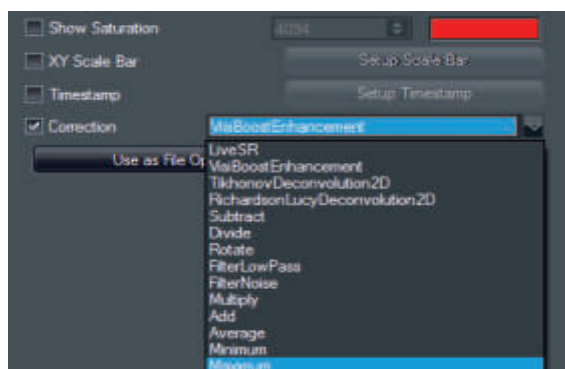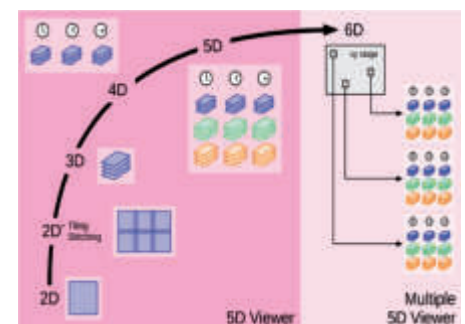
3D Measurement / Analysis

Easy to measure volume

Interactive measurement allows to measure parameter like length, volume, surface etc..by combining a user-definable threshold with freely placeable easily VOIs. The VisiView 5D Viewer opens up the possibility to measure 3D structures very easily and fast. Setting a threshold using the appropriate menu in VisiView selects all the signal-pixels of the sample.
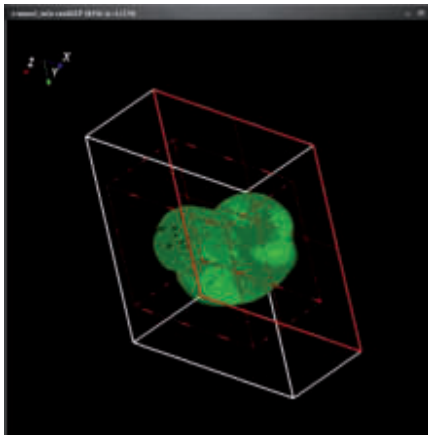
Cutting edge method for 3D and 4D realtime image acquisition and 5D interactive analysis and display.

Large and complex image data acquired in biology, medicine and environmental sciences demand specialized software to perform such tasks as cell analysis, image reconstruction and multi-dimensional data visualization. To accomplish this task, such systems require a identification of relevant regions of interest (ROIs) within an image, extract image features and classify the images. To highlight regions within such images e.g. a thresholding is used for segmentation.


Visualisation and Analysis

The VisiView 3D Measurement module facilitates the visualization of multidimensional data sets, stacks and sequential images. Users can simultaneously view multiple z sections, wavelengths, time points and stage positions in a single intuitive viewing display.

By selecting the VOI VisiView measures the 3D object resulting in information about, for example, the volume or length of the object depending on the type of 3D-ROI.

Key Features:

- » 3D-ROIs: ellipsoid, cube, line
- » Usage of multiple, user definable 3D-ROIs
- » Easy thresholding for selection of signal-pixels
- » Fast Measurement of volume and length
- » Report of measurements to downstream applications
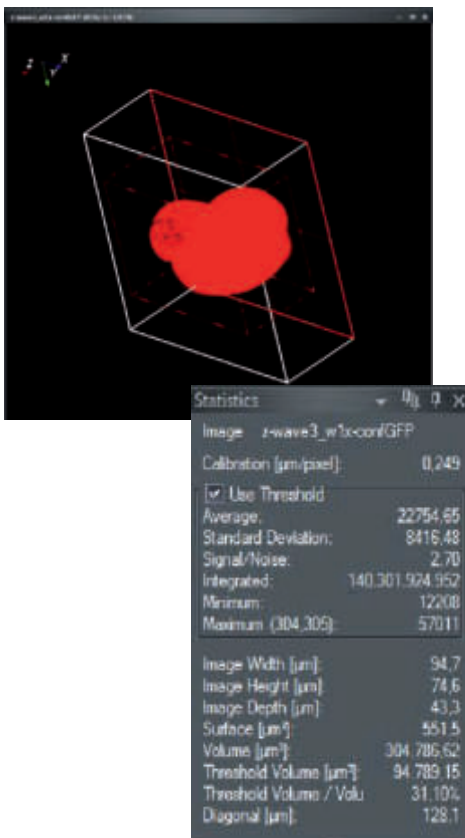
Deconvolution

Realtime 2D Devonvolution by Visitron

The 2D deconvolution can be applied on a live image or an already acquired and stored dataset. There are several 2D alogrithm available, the VisiBoostEnhance, Tikhonov, Richardson and the Live-SR from Gataca.

Live Preview without limits

To more than just previewing! The new Live Preview mode is a part of the "Realtime Processing" option which allows to switch by single click between the raw data and the deconvolved data during the image acquisition. The high speed processing are done in the GPU graphics processor. The raw images are always stored at full speed e.g. 100 frame/sec without modification.
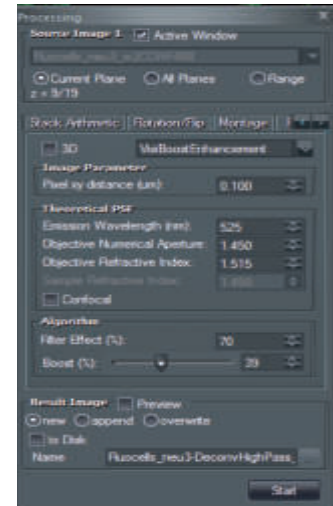
Confocal microscopy is an oft-used technique in biology. Deconvolution of 3D images reduces blurring from out-of-focus light and enables quantitative analyses, but existing software for deconvolution is slow and expensive. We present a parallelized software method that runs about 100 times faster than conventional software by running on a low-cost graphics processor board (GPU).

New Super Resolution Spinning Disk combination require 2D Realtime Deconvolution

3D Deconvolution

VisiView offers a fast post-processing 3D deconvolution based on 3rd party software. The fully integration of deconvolution ensures easy configuration by preset parameters based on image metadata. VisiView Deconvolution offers blind and nonblind algorithm. You can use either measured or theoretical point-spread-functions (PSF).

Requirements

The VisiView 3D Deconvolution requires 64-bit Windows operating system (Windows 7 or later), NVIDIA graphics card (GeForce, Quadro, or Tesla) with CUDA capabilities 2.0 or greater, and up-to-date NVIDIA drivers (version 369, or later).
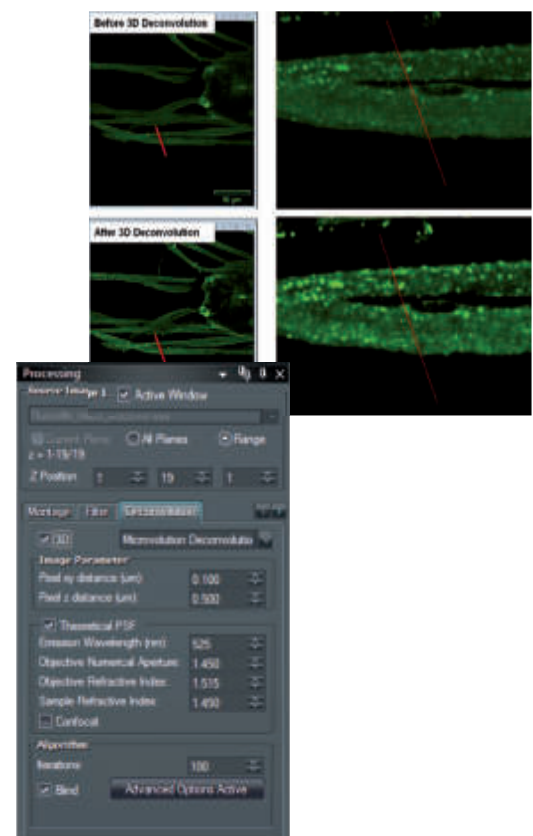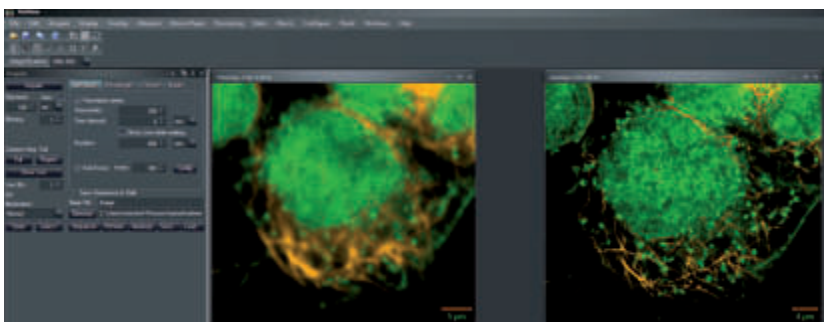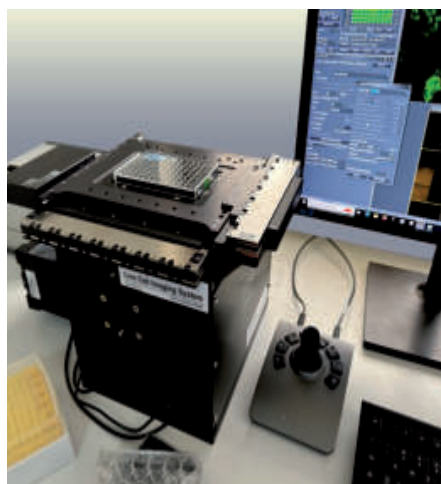
Screening Module

New enhanced Multiwell Screening Option

Basically we took the Multiwell Screening Option and applied all the popular new features of the Scan Slide Option we introduced in version 6. This means the Multiwell option gets a large Detail View Window for navigation. Within this window the Live image is placed. The user selects wells for imaging, defines the number of sub-images per well as he was used to. But now the user can also define unique Scan regions for individual wells, create overviews of selected wells and zoom into the overview, and if necessary create a focus map to compensate the usual unevenness of the plate. Last but not least you can apply an assay for immediate screening

Using automated fluorescence microscopy with XYZ-stage and hardware autofocus for research in cell based screening

Recent advances in imaging technology and live-cell fluorescent probes like GFP / RFP, allowing cell biologists to quantitatively examine cell structure and cell functions at higher spatial and temporal resolution than years ago. The Screening option of the Visiview® imaging software helps scientist to acquire automatically a high throughput of cells growing in dishes or multiwell plates. The sample area can be extended by scanning multiple sites per well. VisiView´s unparalleled autofocus always helps to find the best focus.
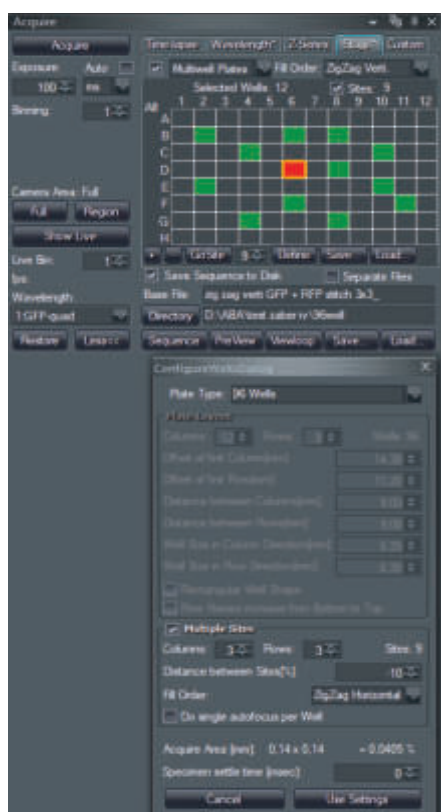
Configure Well Dialog

There are different sizes of multiwell plates available. The VisiView® screening option supports 6, 12, 24, 48, 96, 384, 1536 and custom formats. For the selected plate type a plate layout is created with calibration values for offset, distance between columns and rows, well size and well shape. In addition, multiple sites for each single well can be selected, e.g. 16x16, if higher objective magnification is used for high resolution imaging mode. The specimen settle time optionally prevents from taking blurred images of samples wobbling due to inertia.

Autofocus

The autofocus module calculates the optimal focal section for each multi-well sample in reflected-light, transmitted-light and fluorescence. For images that are recorded as time lapse or at different well positions, the cells are automatically refocused if a focus shift appears.

Calibration

The screening system is easy to use because of the predefined stage and magnification calibration. The user only has to select the objective and define the current well position.

Object Analysis by AI

Segmentation of Image Information

The segmentation of cell images is a necessary step of many automated biomedical image processing procedures. The function offers intelligent threshold operations for images to identify your objects or image information. The threshold function offers various methods like below-, above-, inclusive-, exclusive to segment the image.

Image Enhancement

Because of shading or background effects, correction and enhancement of images is required before segmentation can be performed. The processing tool of VisiView® helps to prepare your image for optimal analysis.

AI Morphometry Workflow
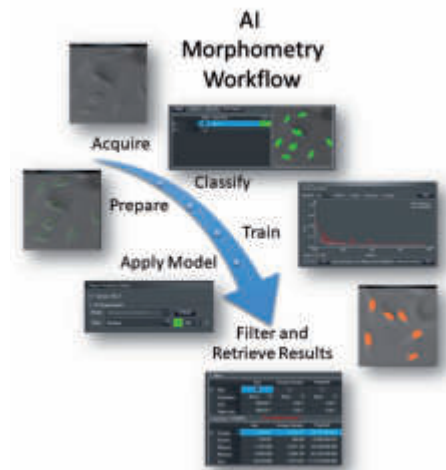
Automated object identification and counting allows the user to choose different parameters for morphometric measurement or classification of cells. Measure all objects or define filters to restrict your measurements to objects which meet specific customized criteria.

Object analysis count, classify and measure multiple cell parameters with trainale AI moduls for automated segmentation and morphometry

## Object Analysis - Cell Counting

Measure or count cells automatically with a wide range of object classifiers. The object analysis tool makes it possible to determine morphometric parameters from the specimen and to report them automatically into Microsoft® Excel or text format.

The well arranged object analysis dialog displays selectively filter functions, sum of object statistic or single object values. Again, VisiView`s unmatched on-line functionality offers simple on-line adjustment of threshold to improve the object segmentation and analysis result.

Certain options can be selected to improve the display and analysis like object color, display object border, fill holes, create object mask etc.. Artifacts are removed by the individual filter functions and displayed in a different color. This function makes the VisiView® imaging software a powerful analysis tool.

Realtime Object Counting

The object counting of VisiView allows both the analysis of stored images and the on-line counting at live acquisition. Depending on the selected filter criteria all images and results can be stored or rejected.
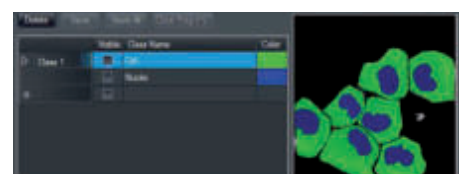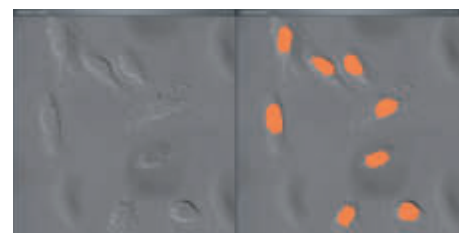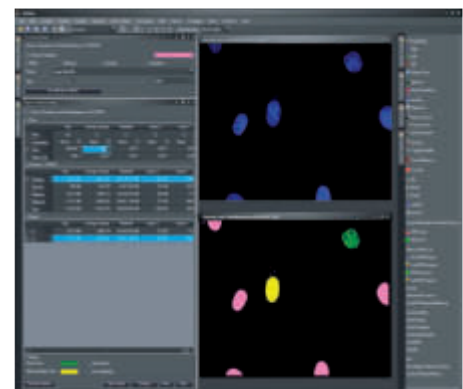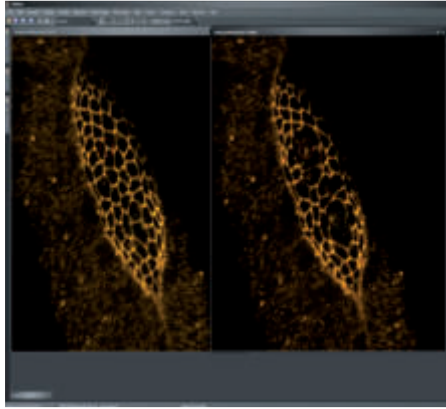
FRAP - Ablation Module

Easy to use FRAP Scanner

The VisiView® FRAP option in conjunction with the 2D-VisiFRAP gives you control over high power lasers, which are focused down to the μm-scale. The co-evolution of Software and 2D-VisiFRAP results in a perfect interplay and high time resolution when switching lasers. Moreover, flexible ROI selection and fast laser deflection provide the freedom to specifically excite multiple parts of your sample almost at once.

Analyze FRAP Fluorescence Recovery by using 1D or 2D VisiFRAP scanner

FRAP - Fluorescence recovery after photo bleaching is commonly used to measure the lateral mobility of molecules in a lipid bilayer. For this, the molecule of interest is linked to a fluorescent dye, which is at the first step bleached by high intensity light in a specific area of the sample. The lateral diffusion of intact fluorophores into the bleached area is called fluorescence recovery and can be measured by immediate and sequential image capture after the bleaching step.
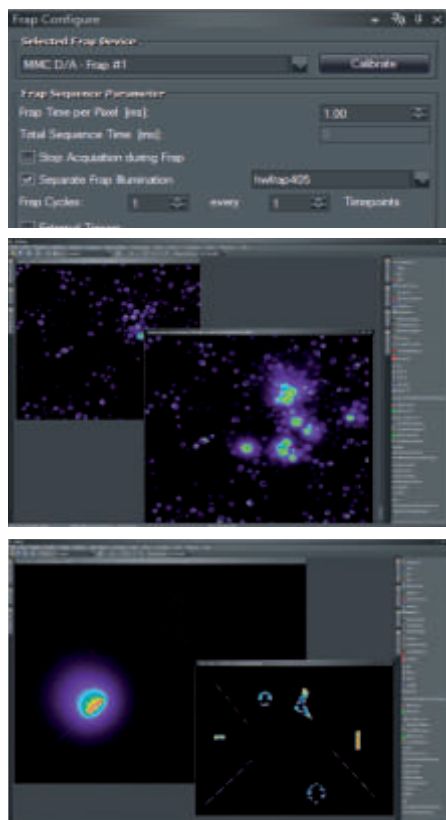
FRAP Acquisition Dialog

The FRAP configuration dialog is directly accessible from the time lapse tab of the clear-cut VisiView acquire dialog. It gives you control over FRAP parameters as well as access to the simple auto-calibration procedure. Further, you can easily test the FRAP parameters using a live preview before you start the real experiment.

Automatic Calibration Algorithm

A calibration which matches the camera coordinates with the laser scanner galvo coordinates needs to be done once for each microscope objective used for FRAP. This is accomplished automatically by moving the beam to some pre-defined positions in the live image and marking their coordinates. Subsequently, the appropriate calibration is selected automatically when the objective is changed.

FRAP on the Fly Function

For fast kinetics, FRAP on the Fly mode can be used. During the acquisition sequence e.g. cells can be laser activated by clicking with the mouse pointer within the image and can be on-line recorded.

Python Programming

VisiView`s flexible installation and Macro programming

Installation of VisiView on new computers is now a one step pro-cess. All VisiView associated third party software components are installed automatically (except imaging device drivers). By the newly designed VisiView Updater, only a single file is needed for automatic patch update.

The VisiView update or bug fix patches can be down loaded from our ftp server. The typical VisiView maintenance is 12 month

VisiView provides a real step forward to improved usa-bility, device handling and macro programming.The VisiView setup process becomes a one-step procedure!

Python programming supports the freedom of experi-ment design and image post-processing!

Unprecedented
Flexibility
by known Python
programming
language

Unprecedented Flexibility

Unprecedented flexibility of the software is achieved by integra-tion of the widely known Python programming language. Due to its free accessibility, it is beyond the limit of proprietary macro languages. Upon update to VisiView all old-style VisiView mac-ros are translated into python macros by the VisiView Pythonizer.

Although Python is a very powerful programming language the syntax is easy and very clear. In conjunction with the intelligent macro editor with auto-complete function the user can start wri-ting macros from scratch without any programming experience.

Python macros are the basis for automation of booth simple but frequently used and of more complex imaging tasks. Macros can be assigned to toolbar buttons in order to have direct access from the user interface.

VisiView methods and properties are assembled in a main class called VV and subdivided into subclasses. Type VV. first. When typing the dot you will get an autocomplete window giving you the available classes, functions or properties.
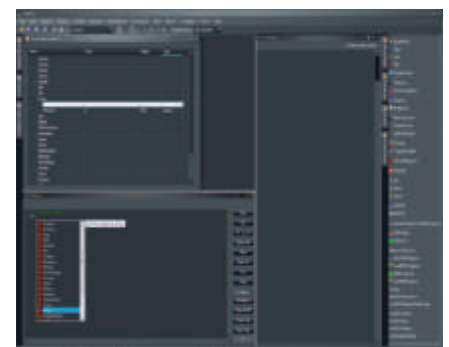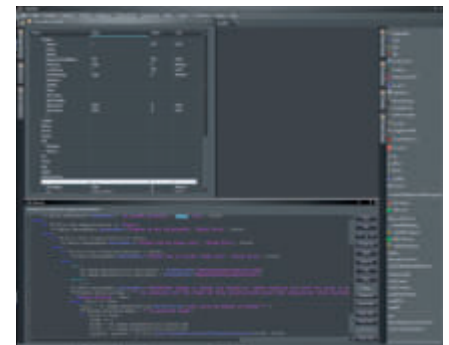
Supported File Formats

Read and write support of 8/16bit TIFF, single and multiple TIFF, BMP, SPE, STK and nd MetaMorph, OME Tif, OME Big Tif.

AVI Movies

Easily convert sequence files into AVI video format.

System Requirements

Windows® 11 Pro
64bit support

Computer,- RAM,- Harddisc:
fast Intel CPU min 2,1 GHz, 16.0 GB RAM, 500 GB HDD disk

Specifications are subject to change. Please contact Visitron Systems GmbH or your local reseller for the latest features.

Modular VisiView® software with various plug-ins and device drivers for advanced microscopy imaging

Customized Developments

Do you need customized software features to improve the functionality of your experiment or to implement special equipment in your microscopy setup?
The VisiView® software would be a perfect solution. With a dynamic team of software engineers we are listening to our customers and with our experience we try to help to suit your specific needs.

VisiView® Microscope Support Big Four and Open-Frame:

- Zeiss
- Leica
- Olympus/Evident
- Nikon microscopes
- Cephla,
- Prior Openstand,
- Zaber Nucleus,
- ....