

Vision Morpho and Vision Epi



Digital solution for morphological analysis and fluorescence microscopy

morphological
analysis



New standards in the daily work

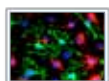
Applications



medicine



clinical laboratory



fluorescence



histology



cytology



pathology



forensics



biology



botany



veterinary



telemedicine



remote consultations



specialist training



Vision concept

Vision concept is a modern approach to diagnostics, combining microscopy, digital image processing and analysis data. Specialists, that are looking for professional development and recognize new digital technologies, are presented with unlimited resources in their field.

Vision digital solutions

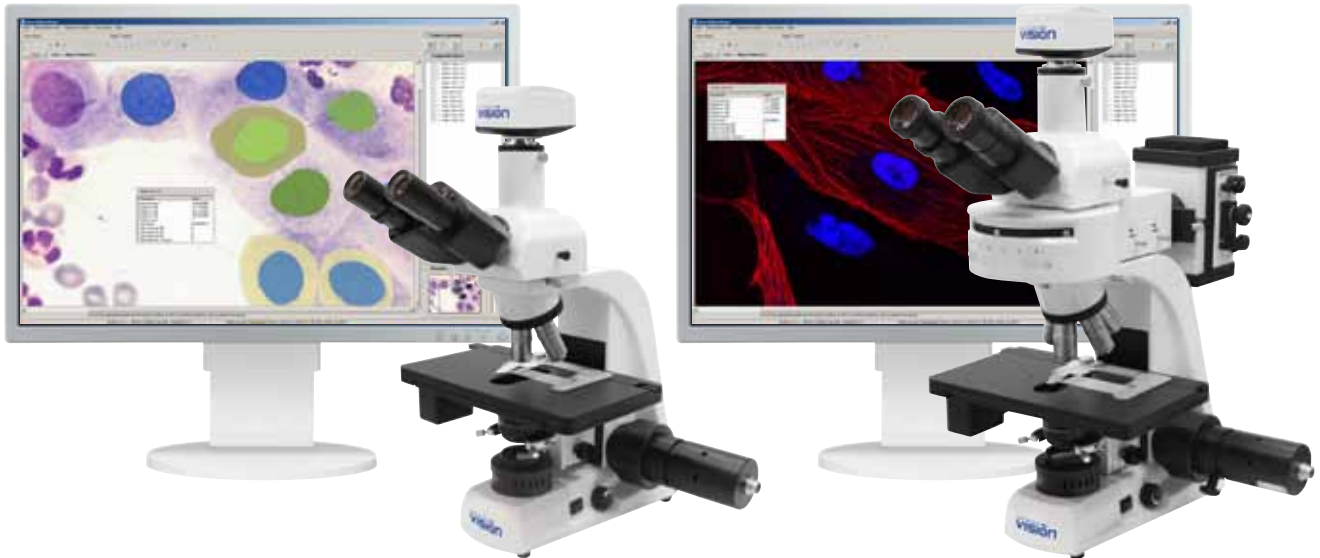
Vision digital solution is a workplace to obtain, manage, analyze and interpret digital microscopic samples. You work with a unified system where priority is given to efficiency.

Vision+ digital solutions

Vision+ digital solution combines the possibilities of digital solutions in microscopy and analytic medical devices to provide an integrated patient assay and a correct diagnosis.

Improve your standards and enhance the quality of your work! Take control of the increasing amount of information in your laboratory.

Vision solutions



Digital microscopy

Digital microscopy (digital pathology) is a digital environment for managing and analyzing microscopy data, which is obtained using a microscope, a camera, software and a computer.

Digital microscopy allows you to attain qualitative and quantitative results, which are either impossible to receive by other means or cost and time consuming.

Vision Morpho



Solution for morphological analysis of digital samples. Analysis of morphology, shapes, marks, optical density and concentration of a wide range of objects. Statistical processing of saved measurements. Tools to select object borders with automatic detection of contrast contours.

Vision Epi



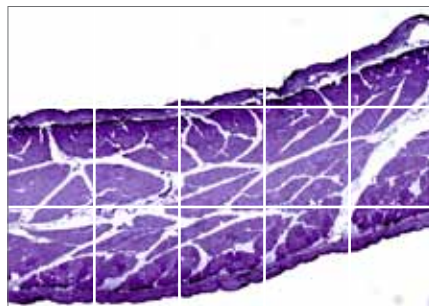
Solution for morphological analysis of digital samples in fluorescence microscopy: Specialized tools for automatic selection and quantitative analysis of different cytochemical and fluorescence staining techniques. Analysis of morphology, shapes, marks, optical density and concentration of a wide range of objects. Statistical processing of saved measurements.



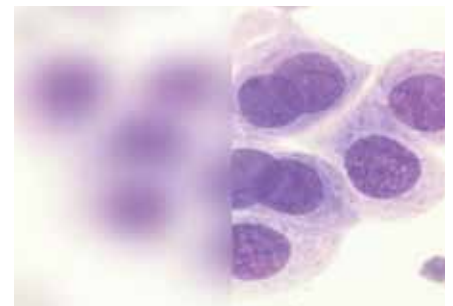
Main benefits



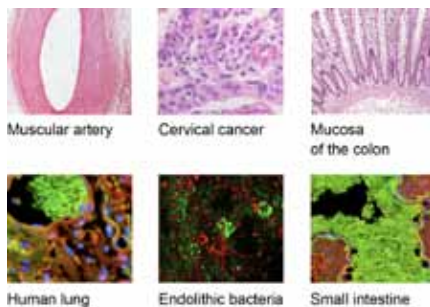
1 Motorized microscope and Vision digital camera



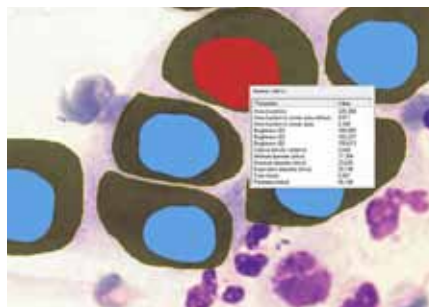
2 Automatic preparation of digital samples



3 Autofocus — automatic focus adjustment



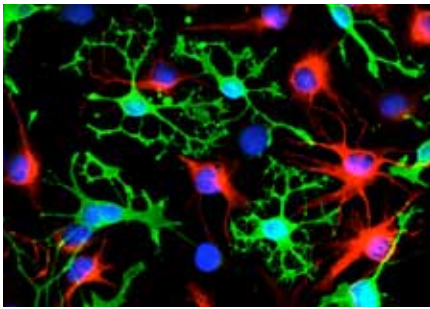
4 Image editor and atlas of digital samples



5 Morphological analysis and classification of elements

Display parameters		Features	
Feature		Panel	
<input checked="" type="checkbox"/> Area (sq.mkm.)		+	
<input checked="" type="checkbox"/> Brightness (R)		+	
<input checked="" type="checkbox"/> Brightness (G)		+	
<input checked="" type="checkbox"/> Brightness (B)		+	
<input checked="" type="checkbox"/> Perimeter (mkm)		+	
<input checked="" type="checkbox"/> Area fraction to owner area		+	
<input type="checkbox"/> Area fraction in frame			
<input type="checkbox"/> Area fraction to owner area without ...			

6 Customizable reference guide of analysis objects and parameters



7 Tools for automatic selection of fluorescence stains*



8 Database: storing, sorting and searching



9 Statistical processing and report generation of the analysis



10 Easy access to analysis results and digital samples



11 Telemedicine and remote consultations with colleagues



12 Education for specialists: scientists, doctors, lab technicians and students

* only with Vision Epi

Motorized microscope



It is much easier to work with a motorized microscope. «Auto Focus» function allows me to capture a crisp image of a sample. I use joystick or cursor keys to move along the sample area



A motorized microscope is the main component of the analysis system

Vision solutions are based on a motorized microscope that implements 3 principal automatic functions: scanning along X/Y axes and focusing on Z axis.

A motorized microscope changes your work completely from manual to automatic, increasing efficiency. It is designed with a focus on convenience and ease. You work with a unified system: a microscope, a camera and a computer, without wasting time on manual operations with a microscope.

A digital sample is generated by digitizing a microscopic image taken with a Vision camera connected to a trinocular microscope with a C-mount adapter.

A slide is usually scanned at low and high magnification (often with 10x and 40x objectives) facilitating easy navigation and zoom with no loss of image quality. This ensures repeatability of results as compared to standard manual microscopy.

We have made every effort to provide you with a solution of highest accuracy, reliability and repeatability. All drives are controlled by means of the dedicated software and control unit.



5300 — motorized biological microscope for Vision Morpho

- Convenient Siedentopf type trinocular viewing head
- Motorized stage for biological microscope, 2 or 3 levels, 75x30 mm
- Automated focus control (Z-movement)
- ICOS™ (Infinity Corrected Optical System) with advanced optics
- SWH 10x widefield high eyepoint eyepiece, F.N. 22 (standard)
- Ergonomic revolving nosepiece for 5 objectives to change magnification
- New improved U Plan achromat ICO Infinite objectives



6300 — motorized fluorescence microscope for Vision Epi

- Convenient Siedentopf type trinocular viewing head
- Motorized stage for biological microscope, 2 or 3 levels, 75x30 mm
- Automated focus control (Z-movement)
- ICOS™ (Infinity Corrected Optical System) with advanced optics
- SWH 10x widefield high eyepoint eyepiece, F.N. 22 (standard)
- Ergonomic revolving nosepiece for 5 objectives to change magnification
- Fluorescence module: fluorescence reflected light illuminator with a mount for six fluorescent filter sets
- Standard blue, green and neutral density filters
- Lamphouse for 100 W mercury lamp

Vision digital camera



Vision CAM V2200

- Developed specifically for a wide range of applications in microscopy whenever extra high sensitivity and colour rendering are required
- 2/3" CCD sensor with extra high sensitivity
- 1.4 megapixels, resolution 1392x1040 pixels
- Colour or monochrome version of image output
- High quality video image with high frame rate
- Image transfer to a computer via high-speed USB 2.0 interface without additional intermediary devices
- Camera control and power supply via USB 2.0 interface using a computer with Vision Capture software
- Manual and automatic exposure and white balance settings for accurate colour rendering at any illumination
- Standard C-mount

Complete control of your Vision camera



Camera settings

Different modes when working with color (8 or 16 bit) allow color depth adjustment. "Field alignment" function removes any image defects: uneven field illumination, dust and scratches on optical components of the system.



Color settings and exposure/brightness control

Manual or automatic color settings give the possibility of image adjustment according to illumination (LED or halogen). If its necessary to change image brightness, adjust exposure.



Histogram

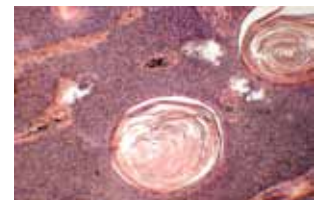
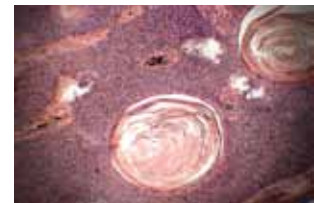
Histogram explores contrast, saturation and exposure of the image, as well as estimates what is required when capturing/enhancing an image.



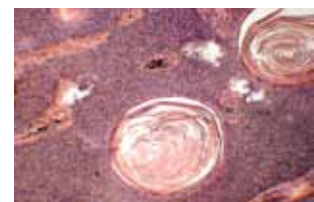
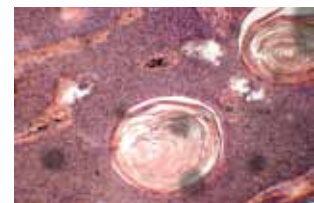
Preview

Live image preview. "Zoom" function lets you magnify the sample. "Resolution" function sets the size of the captured image in pixels.

Background correction



Dust removal



Digital sample preparation

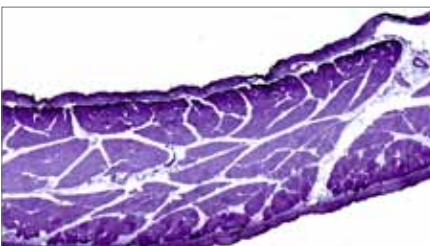
1

Create a digital sample

Prepare a microscopic slide and place it on the stage of your motorized microscope.



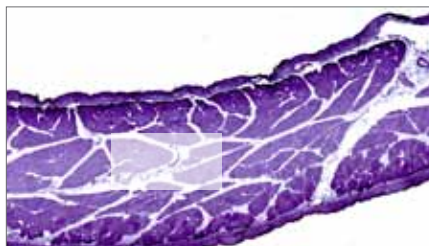
Set the required parameters: size, thickness and location of the object, and autofocus if required. After that Vision system will prepare a complete digital sample automatically.



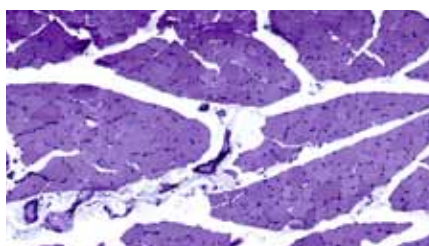
2

Select a specific area of the digital sample

If required, you can scan the slide again with a higher magnification (40x or 100x).



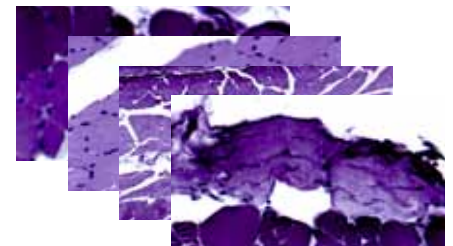
This will provide additional quantitative information, as well as significantly improve the detailization of a specific area of the primary image.



3

Securely save it in the database

Digital microscopic samples are saved in the database.

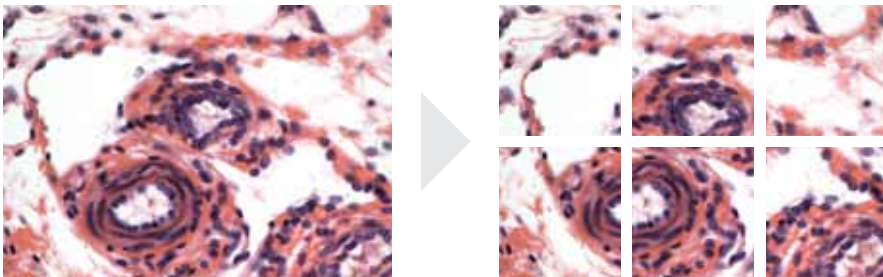


Use the “Digital sample editor” to import, export and edit individual frames as well as complete digital samples.

Digital microscopic samples can be used for remote consultations with colleagues, video conferences, publications on specialized social networks, etc.

Image editor and atlas of digital samples

Image editor is used to manage and edit frames of a digital sample



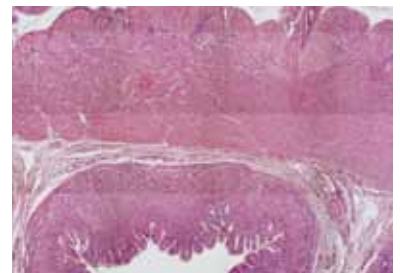
There is a date, ID and name of every digital sample displayed in the editor. Select a sample in the gallery to display automatically all the its frames, that can be scaled freely.

Use the editor to perform the following tasks:

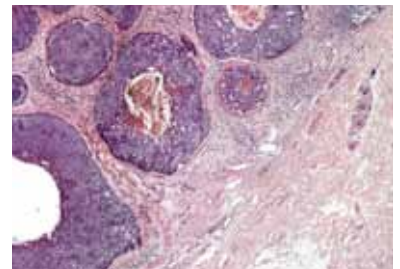
- import microscopic frames captured in external programs
- copy or move frames from one sample to another
- perform frame specific actions “Overlay” and “Wide focus”

Atlas of microscopic objects is a customizable hierarchical database

Customize the atlas structure by adding required sections and text comments to microscopic images.



Gastric tissue



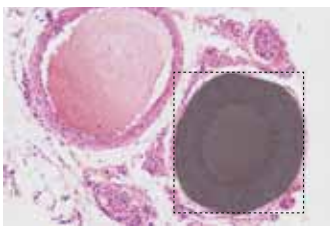
Basal cell carcinoma



Spinal cord, cross-section

Image analysis

Analysis objects



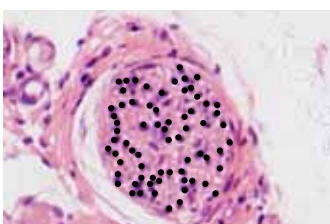
Region



Segments



Angles

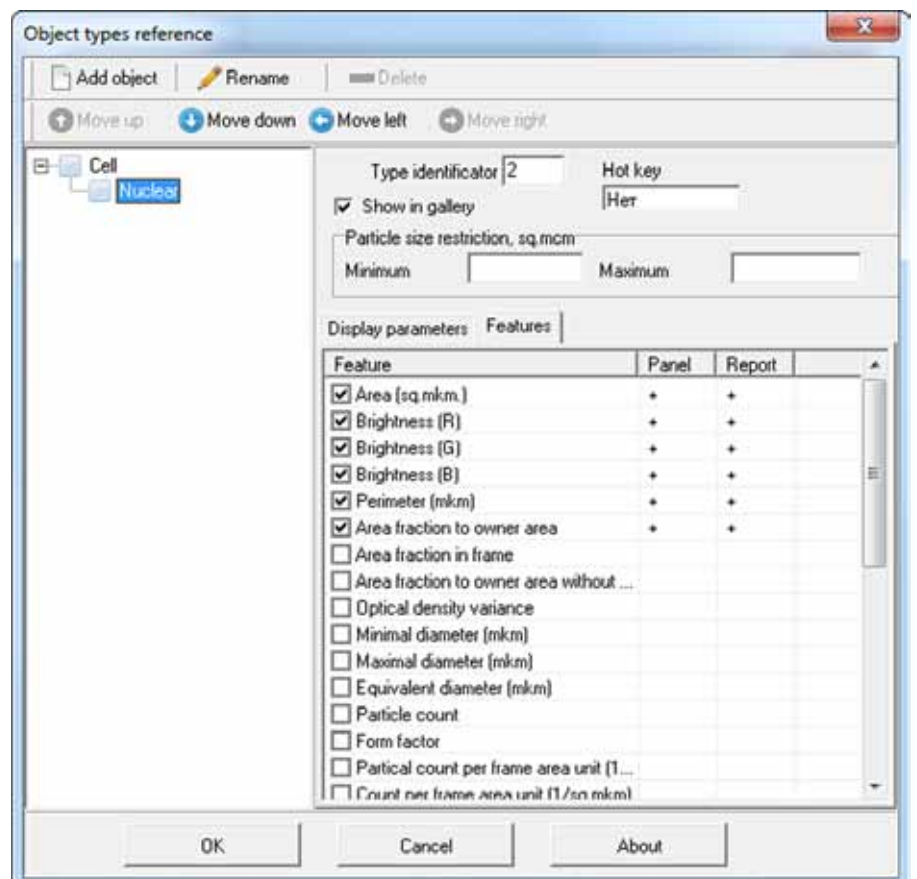


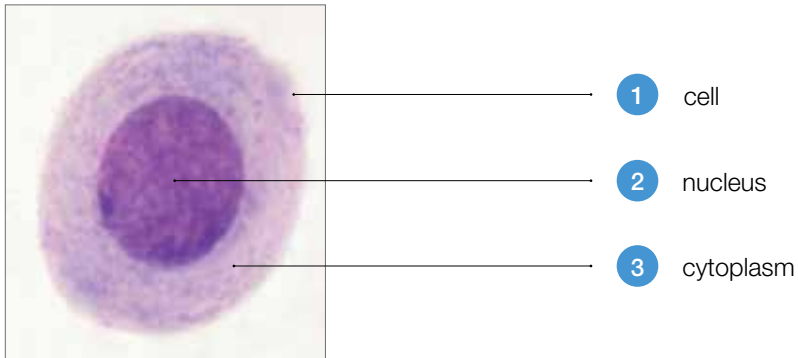
Points

Analysis objects reference guide

Specify a set of analysis objects, set their type and dependency between them

Object measurements are performed depending on the object type.






Customizable reference guide of analysis objects enables quick setting of new analysis methods for our scientific research and practical work



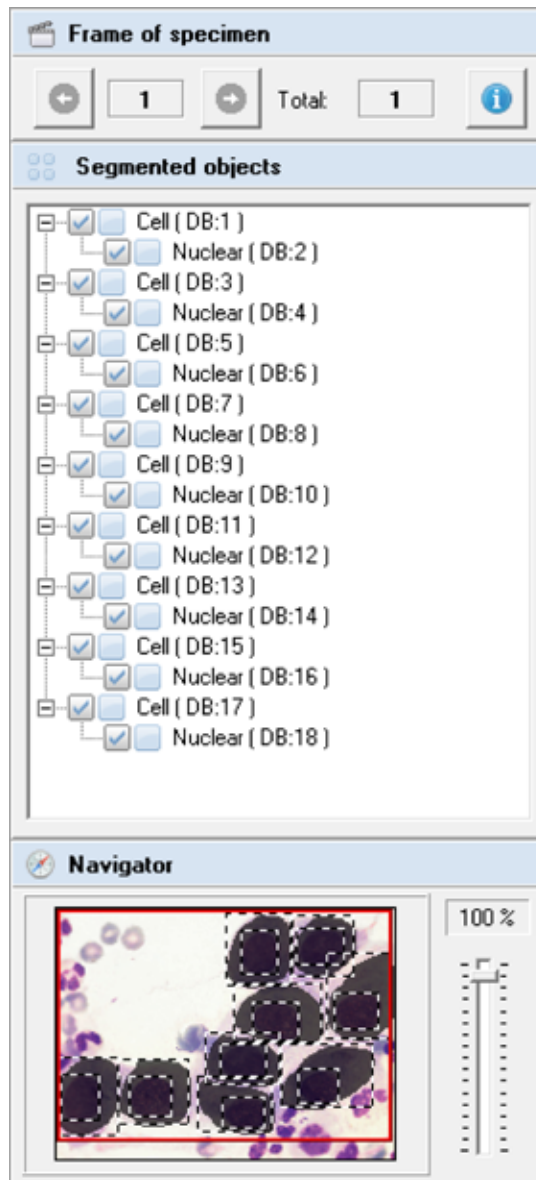
Reference guide customization to calculate nuclear-cytoplasmic ratio in a series of cells

- 1 Select objects of examination and set required calculation parameters.
- 2 There are two objects: a cell (1) and a nucleus (2). Type for both is region. A nucleus is located inside the cell, i.e. the nucleus is a host for the cell.
- 3 The result is the following structure:
 
- 4 Next, select the measurement parameters to calculate the nuclear-cytoplasmic ratio.
- 5 For a cell (1) choose — the area, for a nucleus (2) — area and area fraction complement to the host. In this case, complement to the host will be the cytoplasm (3).
- 6 You now have, in the reference guide, a structure to calculate nuclear (2), -cytoplasmic (3) ratios.

Measured parameters

- area
- area fraction complement to the host
- host area fraction
- brightness (R, G, B)
- optical density dispersion
- minimum diameter
- maximum diameter
- equivalent diameter
- shape factor
- quantity
- number of objects in a frame
- number of objects in a host
- number of objects per area (1 mm²)
- area of inclusions
- number of inclusions
- inclusion eccentricity
- inclusion fraction
- fraction without inclusions
- optical density (R, G, B)
- perimeter
- polarization index
- other

Object tree



All analysis elements are at hand

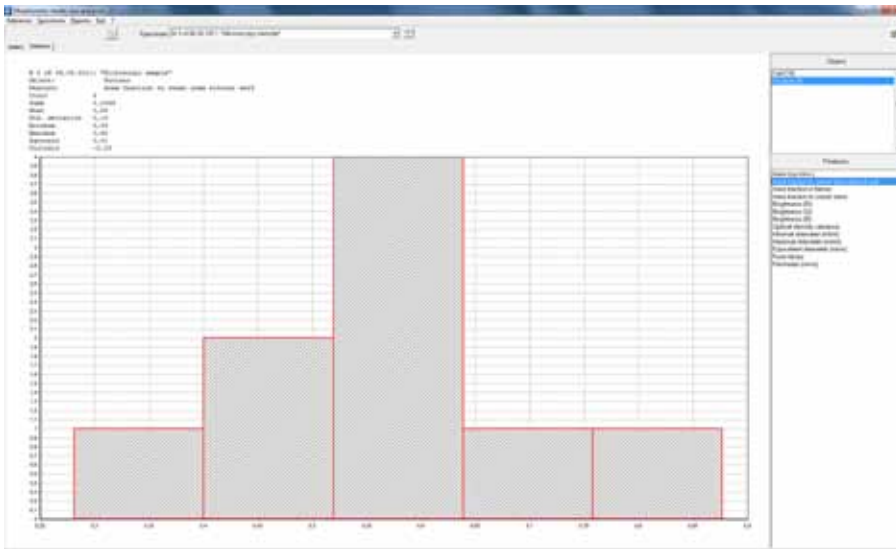
Object tree is an organized list that contains all analyzed objects.

Select an object in the object tree and the system will display all information regarding its measurement parameters.

If there is any information you don't need at the moment, for example, marks and comments that interfere with your work, just deselect the checkbox, and they will be hidden. Select the checkbox to view your comments again.

Classification and object analysis

Flexible and powerful classification adapted to required analysis tasks



Classify analyzed objects using required criteria to generate a report.

Select a required analysis object and measurement parameter to start classification.

The system will automatically measure and display the results visually in a histogram form.

Selection tools



Region (Mask)

In order to measure regions, select it using manual or automatic tools.



Segments

To measure the length of a segment of any complexity use one of three tools: Line, Bezier Curve or Pencil.



Angles

Set three points of an angle, and the system will calculate it for you in degrees and radians.



Points

Mark an object of analysis with points and the system will calculate their number and color characteristics.

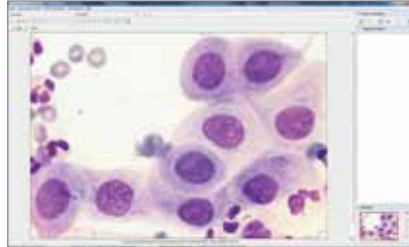


My research has been documented and is based on precise mathematical and physical calculations. Now the results have a clear structure and order

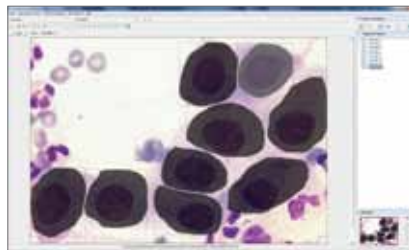


Example of Vision Morpho analysis

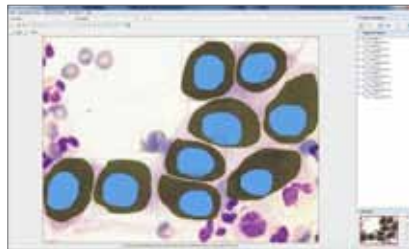
Calculation of the nuclear-cytoplasmic ratio of a group of cells



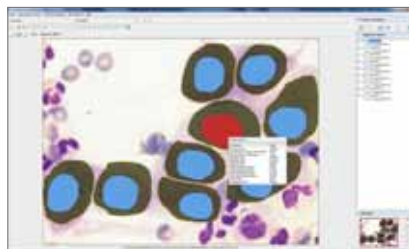
1 Capture an image of a microscopic sample.



2 Select cells to be examined and analyze them. When their parameters are measured the cells are saved in the object tree.



3 Select nuclei of the cells and analyze the selection. When their parameters are measured the nuclei are saved in the object tree and assigned to cells.



4 Select a nucleus and the system will calculate the nuclear-cytoplasmic ratio.



5 Classify cells. Generate and print out the analysis report.

Report generation

Professional report



Analysis parameters are exported to Microsoft Excel where further analytical calculations can be made on the obtained results and additional elements included to make a more detailed and comprehensive report.

Send your report to your colleagues by email, publish it in specialized social networks online or just print it out.



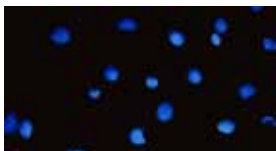
*I can send the report
to my colleagues
by email, publish
it in a specialized social
network online or just
print it out*



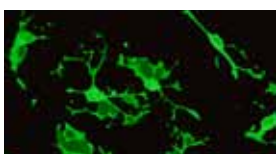
Fluorescence analysis

Final image

Final image is generated by combining a series of original images with different fluorescent stains



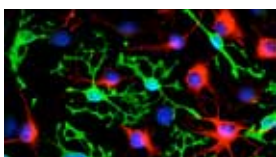
DAPI-stained image



FITC-stained image



TRITC-stained image



Final image

Fluorescence analysis

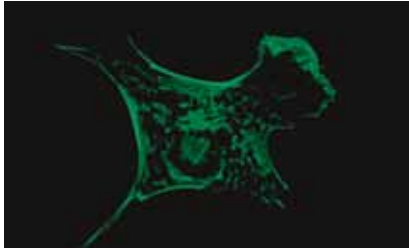
Specialized tools for automatic selection and quantitative analysis of different cytochemical and fluorescence staining techniques (Acridine Orange, Auramine, EGFP, FITC, S65T, RSGFP, Rhodamine 237, RH414, RH421, RH795, LDS751, TRITC, Proquidium Iodine, RFP, DAPI, Hoechst 33342, Hoechst 34580, AMCA and others)

Application of fluorescence analysis

- infection diagnostics: mycobacterium tuberculosis, ureaplasma, mycoplasma, etc.
- neoplastic disease diagnostics: cervical cancer, breast cancer, hepatoma, etc.
- genetic disease diagnostics
- disseminated connective tissue disease diagnostics: rheumatoid arthritis, lupus, rheumatism, Shengrena syndrome, etc.
- autoimmune disease diagnostics of various organs
- use in IVF to prevent congenital defects
- histological and cytological scientific research

Example of Vision Epi analysis

Morphological analysis of a fluorescence image



1 Capture a FITC-stained image.



2 Capture a TRITC-stained image.



3 Obtain a final image by combining a series of original images with different fluorescent stains.



4 Select cells to be examined and analyze them. When their parameters are measured the cells are saved in the object tree.



5 Classify the stains. Generate and print out the analysis report.



Vision Epi system allows me to store my digital samples with fluorescence stains, something I could never do before



Database



*Thanks to the database
I can be sure that
my analysis results
are stored securely,
and, what is the most
important, statistical
reports no longer take
so much time to prepare*



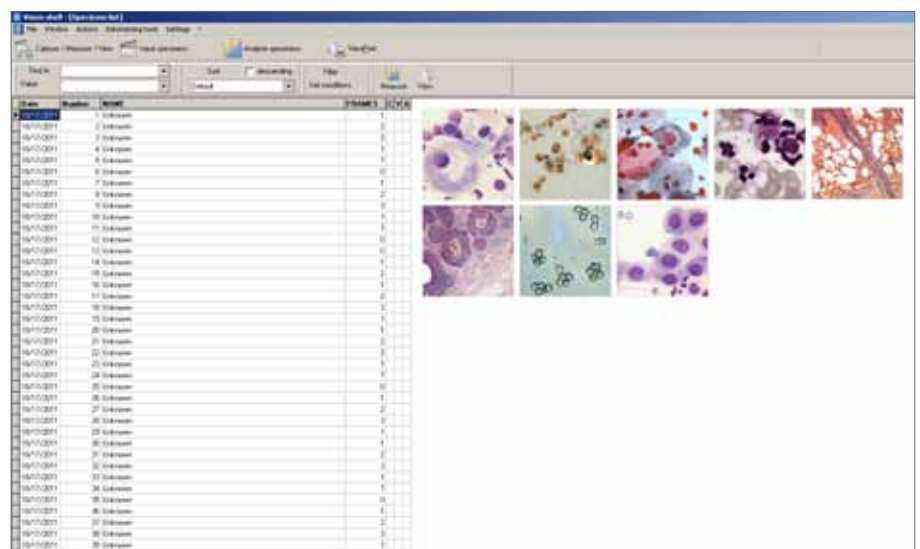
Reliable database

Vision database stores all patient records, microscopic samples, analysis results, and reports. Information is shown in a form of a patient record with his/her analysis result. Possibility to assess quickly the dynamics in analysis results over a period of time.

The system saves all data automatically, excluding any possibility of losing valuable information. Advanced data management tools, like filtering and sorting, will help you not to waste time on searching.

Storage, statistic handling, quick search, cooperation with colleagues, remote access via Internet and integration into other information networks (LIS/HIS).

If you need a special report template or additional data fields to a patient record, we can help you customize the database according to your requirements.



Network capabilities



View analysis results on the screen and discuss with your colleagues.



Print out your reports.



Data import/export to other information networks (LIS/HIS).



Share information with people wherever they are. Send your reports by email.



Organize video conferences with colleagues from around the world.



Connect, via Internet, multiple workplaces to a remote server.





Publish your research on specialized social networks.

Main characteristics

	Description	Vision Morpho	Vision Epi
	Motorized biological microscope with “infinite” optics and Vision digital camera. Preview live video on a PC as well as capture a digital microscopic sample.	✓	
	Motorized fluorescence microscope with “infinite” optics and Vision digital camera. Preview live video on a PC as well as capture a digital microscopic sample.		✓
	Personal computer with Vision software, high resolution monitor and color printer.	✓	✓
	Automatic digital sample preparation. Single images are “stitched” automatically to make a complete digital sample (“virtual slide”).	✓	✓
	Autofocus.	✓	✓
	Image editor of digital samples to work with frames of a digital sample.	✓	✓
	Atlas of microscopic objects is a customizable hierarchical database. Text comments to images in the atlas.	✓	✓
	Analysis of morphology, shapes, marks, optical density and concentration of a wide range of objects. Tools to select objects. Classification.	✓	✓
	Customizable reference guide of objects and examination parameters.	✓	✓
	Calculation of optical and geometric parameters: quantity, optical density, color, brightness, shape, area, diameter, etc.	✓	✓
	Database stores all information about digital samples and analysis results. Statistic handling, quick search and integration into other information networks (LIS/HIS).	✓	✓
	Export of analysis parameters to create a report.	✓	✓
	Specialized tools for automatic selection and quantitative analysis of different cytochemical and fluorescence staining techniques.		✓

Ordering information

	Description	Code
	Vision Morpho system Set includes: MT5300L motorized trinocular microscope, Vision CAM V2200 digital camera, Vision Morpho software, PC, monitor, printer.	70.0103.00
	Vision Epi system Set includes: MT6300H motorized trinocular fluorescence microscope, Vision CAM V2200 digital camera, Vision Epi software, PC, monitor, printer.	70.0104.00



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We reserve the right to change specification without notice.

Official distributor

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