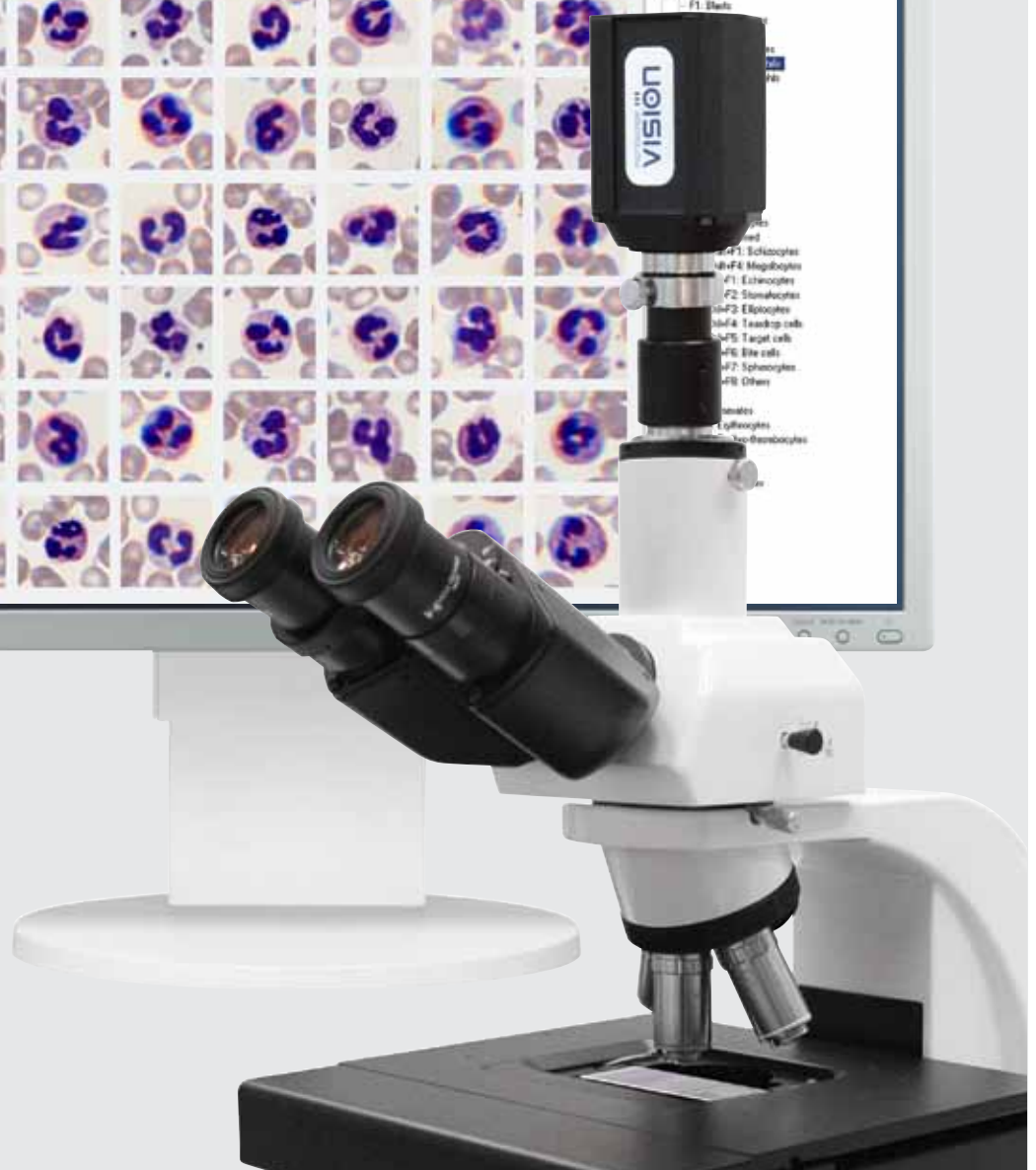
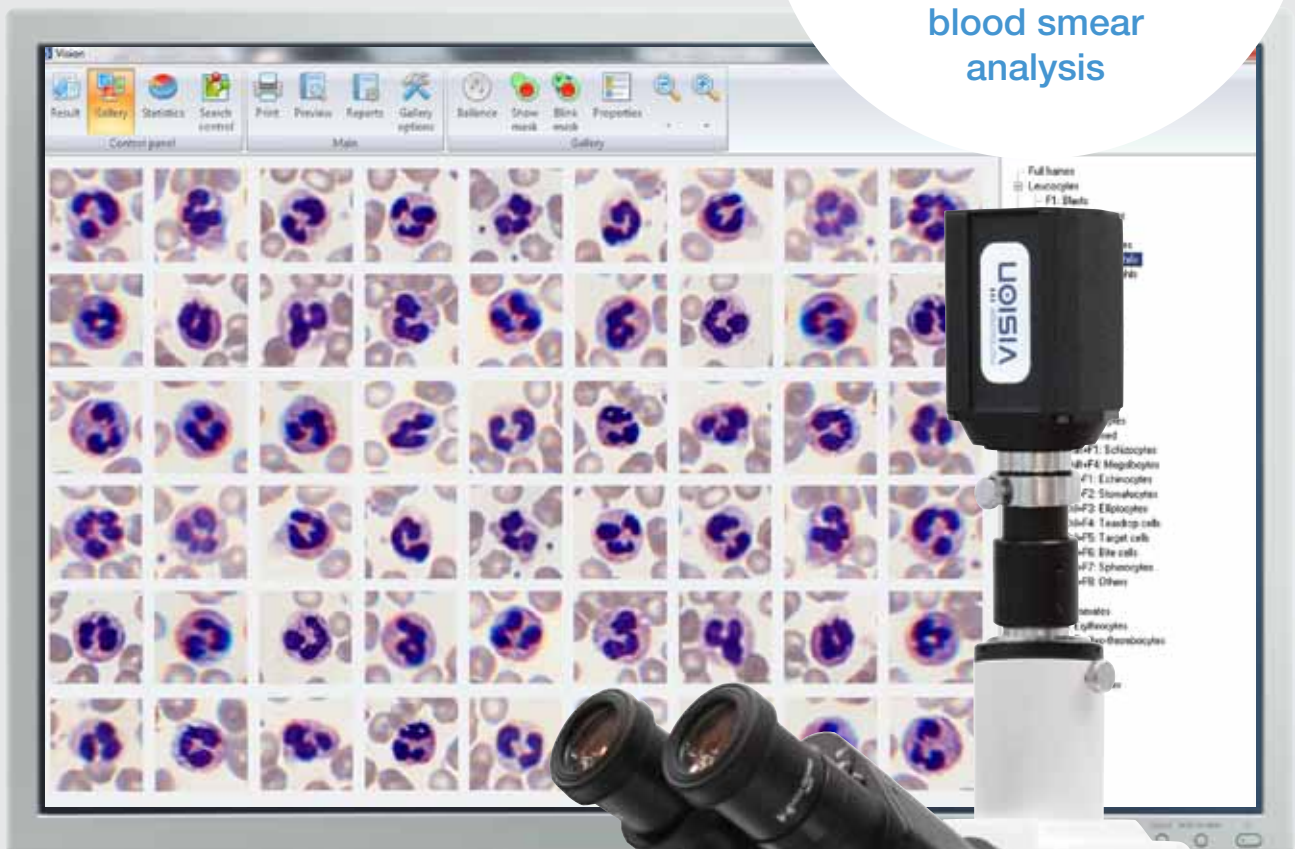


Vision Hema



Digital solution for automated blood smear analysis

blood smear
analysis



New standards in the daily work

Applications



medicine



clinical laboratory



hematology



oncology



blood transfusion
stations



pharmaceuticals



education



remote consultations



specialist training



telemedicine



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 solution



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.

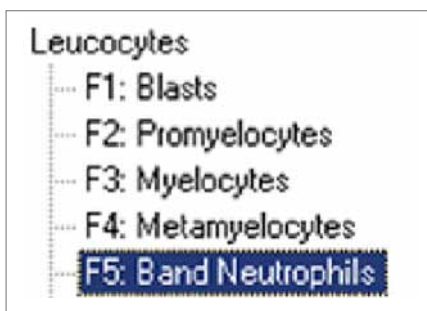
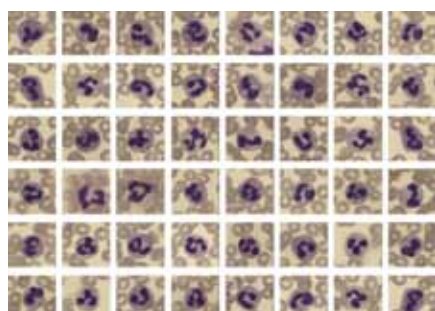
Vision Hema



Automated hematology system for blood smear analysis. Automated capture of blood cell microscopic images and classification of WBC, RBC and platelets. Morphological analysis of blood cells. Easy and convenient management of digital blood samples, analysis results and reports in a mutual digital environment.



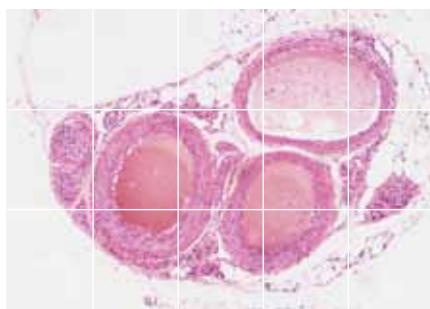
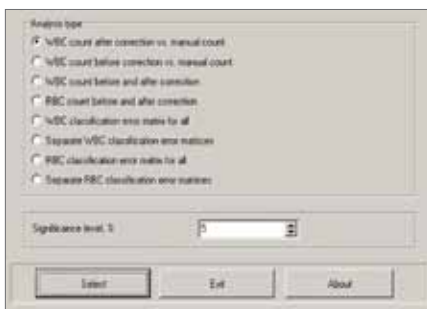
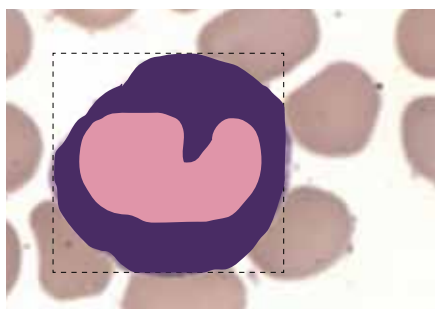
Main benefits



1 Automatic image gallery generation for blood cell microscopy

2 Classification of WBC, RBC and platelets

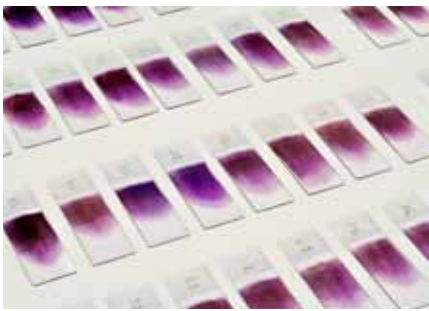
3 Quick verification of analysis results



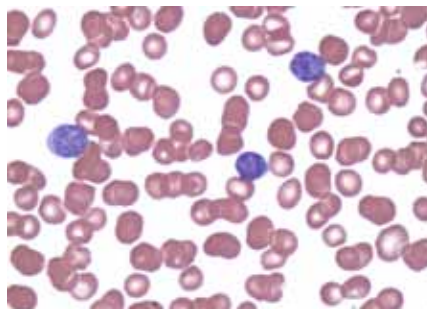
4 Morphological analysis of WBC and RBC

5 Quality control and no "human error" factor

6 Preparation of panoramic digital samples (option)



7 Workflow automation and standardization



8 A workplace for hematologic disorder diagnostics



9 Lack of fatigue from routine work with the microscope



10 Database stores all blood smear galleries and analysis results



11 Possibility to use the system like a standard microscope



12 Telemedicine and remote consultations with colleagues



Workflow automation and standardization

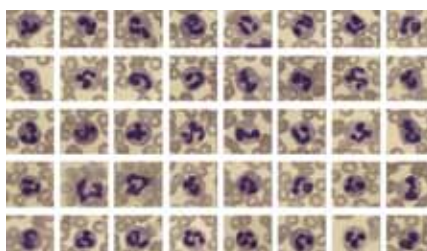
1



Preparation of microscopic blood smear slides

One of the most important analysis stages in a laboratory is the preanalytical phase as it affects the speed and quality of the analysis process. Use standardized tools to prepare and stain a blood smear.

2



Automatic blood smear scanning and cell classification

Vision Hema scans a microscopic sample automatically along an adaptive path in the thin zone, collects data for analysis, sorts blood cells and saves results in the database.

3



Verification of WBC, RBC and platelets

The specialist is free from routine monotonous work. Analysis results are displayed in galleries of cells and arranged in groups. All you need to do is review and verify the results.

4



Report generation in accordance with modern requirements

Report is generated based on analysis results, which you can send to your colleagues by email or simply print out.

5



Secure and reliable data storage

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. The system saves all data automatically, excluding any possibility of losing valuable information.

6



Benefits of Internet connection

Connect several workplaces to a remote server and hold video conferences with colleagues from around the world, exchange analysis results, publish your research on specialized social networks.

Blood smear preparation, analysis process and classification



There is a 95–100% match between the blood smear analysis results performed by Vision Hema system and manual cell count

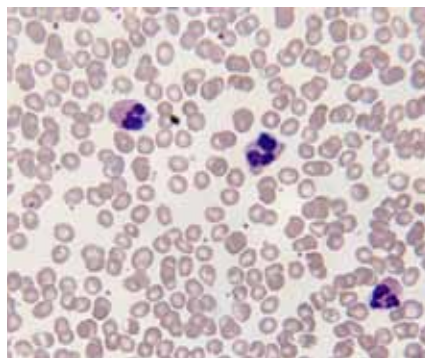


Analysis procedure

Use the benefits of automation to obtain more accurate results with less time and effort

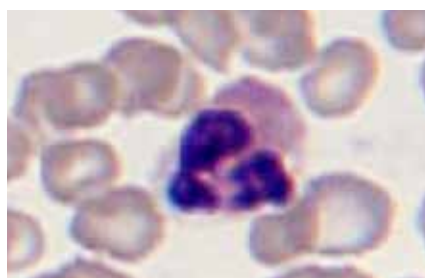


Prepare a microscopic sample, place it on the stage and start the analysis procedure.

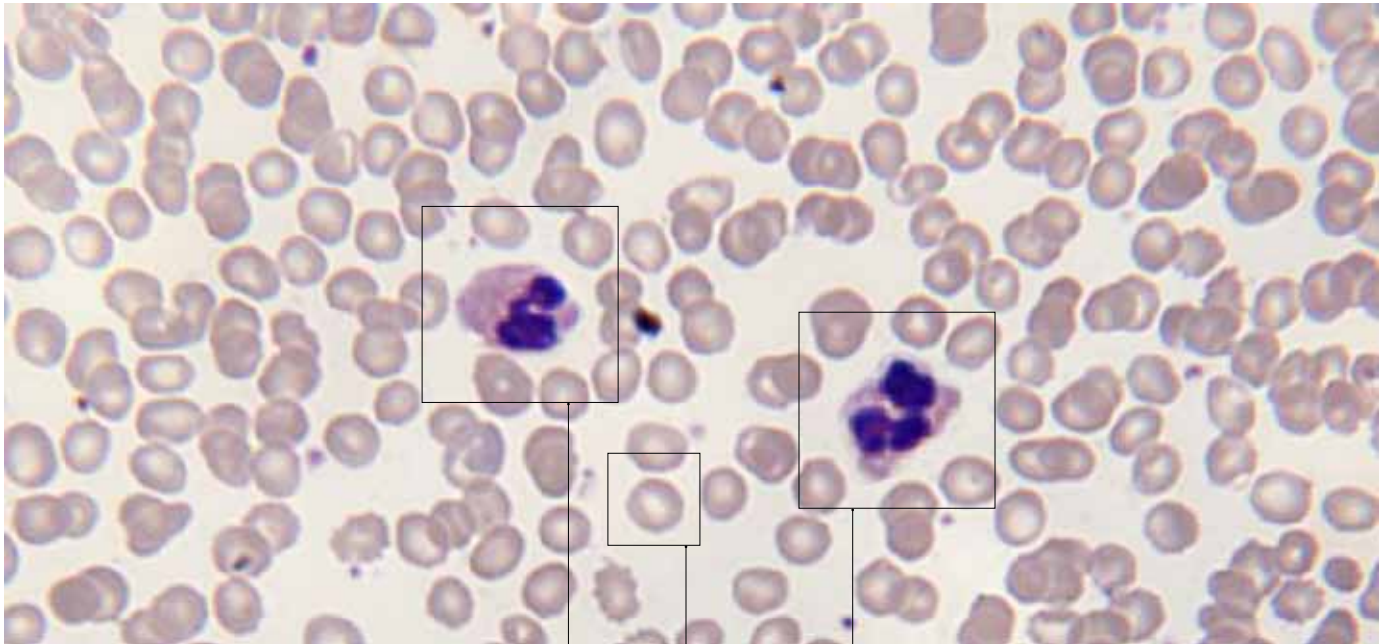


The system will perform the complete analysis procedure automatically:

- scan the microscopic sample along an adaptive path in the thin zone
- collect data for analysis
- sort the blood cells
- save analysis results in the database

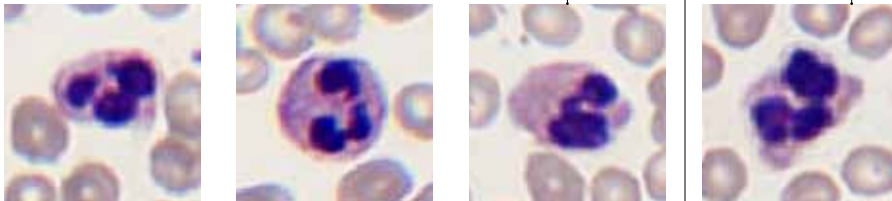


Proceed with data verification and cell morphology analysis.



Cell galleries

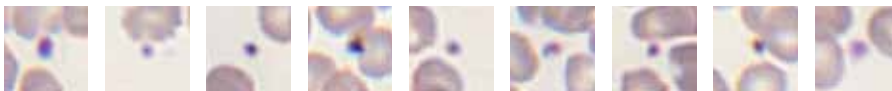
WBC analysis



RBC analysis



Platelet analysis



Blood cells are captured with 40x and 100x objectives. You can set the number of cells collected.

Set the number of blood cells to be examined. Increase analysis accuracy by setting it to 200 or 400 leucocytes.

Blood cell classification

The system automatically locates and identifies over 20 blood cell types

WBC with differentiation into 11 groups:

- promyelocytes
- myelocytes
- metamyelocytes
- band neutrophiles
- segmented neutrophiles
- eosinophils
- basophiles
- lymphocytes
- monocytes
- plasmocytes
- undifferentiated (blast cells, promyeloblasts and myeloblasts)

Erythrocytes (normocytes, megalocytes, poikilocytes, anisocytes, etc.)

Platelets

Artifacts

Other

Analysis results

1 Quantitative indicators

Feature	Name	Analyzer
RBC	4.28	
MCV	79.0	
RDW	19.6	
WBC	14.53	
LYM	2.19	
MON	1.33	
HGB	16.4	
HCT	47.1	
PLT	89	
PCT	0.1	
MPV	12.37	
PDW	19.5	

2 WBC formula, %

Feature	Name	Value	Manual
Unstained blood, %			
Prothrombin, %			
Myelocytes, %	0		
Metamyelocytes, %	0		
Band neutrophils, %	1-8	1.8	
Segmented neutrophils, %	47-72	60.4	
Eosinophils, %	0-5		
Basophils, %	0-2		
Lymphocytes	69-97	28.2	
Monocytes, %	3-11	2.8	
Plasma cells, %			
Other WBC			

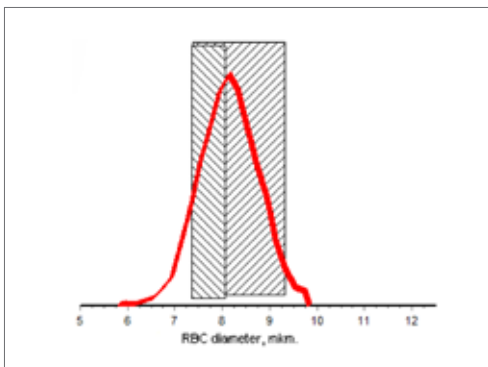
3 RBC formula, %

	Mean	Mean	Mean	Total
Reticulocytes	0.0	0.5	0.4	05.0
Ethecocytes	0.4	2.3	0.0	2.7
Elyocytes	0.0	0.4	0.0	0.4
Teardrop cells	0.0	1.1	0.0	1.1
Target cells	0.0	1.5	0.0	1.5
Sike cells	0.0	0.8	0.4	1.1
Spherocytes	0.0	0.4	0.0	0.4
Others	1.5	25.6	0.0	27.0
Total	3.7	83.5	0.8	100.0

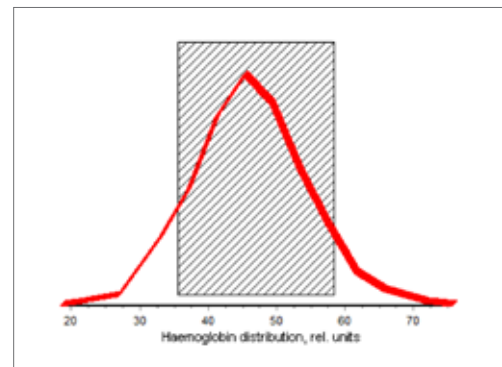
4 Cell morphology

Feature	Name	Value	Manual
Prothrombin, %		94.2	
Anisocytosis, %		0.8	
Anisochromasia, %		10.3	
Poikilocytosis, %			
Discoidic staining			
Erythroblasts per 100 RBC			
Megakaryocytes per 100 RBC			
Jelly body, Clotted rings			
Toxic granules			
Neutrophil hypersegmentation			

5 Erythrocyte diameter distribution



6 Hemoglobin distribution



7 Quality control

Analysis results

Final results are displayed in the form of tables, graphs and text fields

You will see following results:

- 1 Blood cell count results which are either entered manually or received from a hemocytometer automatically.
- 2 Erythrocytes mean diameter distribution.
- 3 Hemoglobin distribution curve.
- 4 Information on leucocyte differential count of 11 groups where percentage of leucocytes of each type is detected in the given sample.
- 5 Information on erythrocytes including the percentage of macrocytes, normocytes and microcytes, as well as erythrocytometry.
- 6 Cell morphology includes parameters such as poikilocytosis, anisocytosis, anisochromia, polychromatophilia and other standard blood test parameters.
- 7 Quality control with statistical messages on smear defects or observation conditions, generated during sample input and analysis of results.

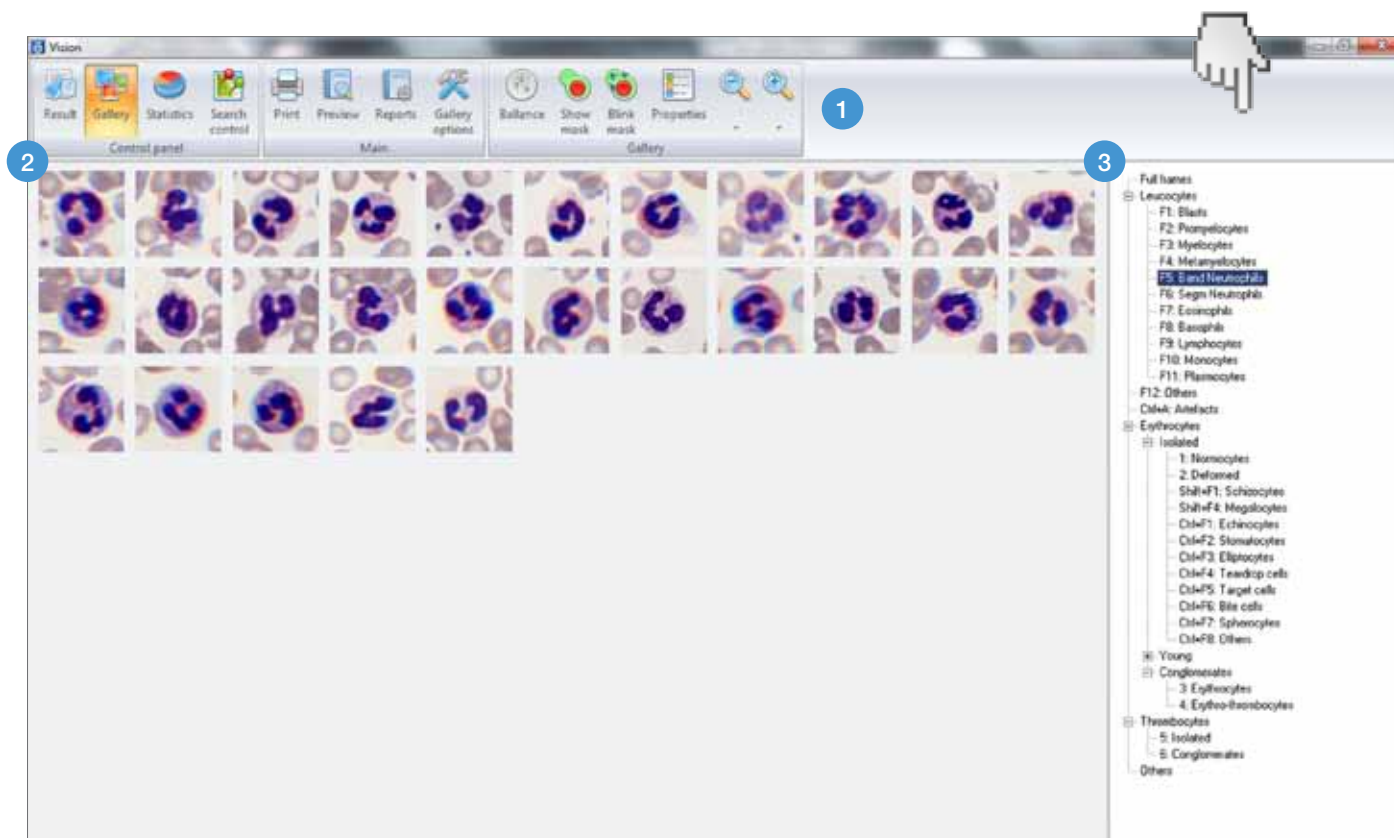


The results are displayed in the form of tables and graphs, thus helping to quickly assess the overall analysis of a blood smear



Blood cell verification

Click on a section in the object tree to view the corresponding cells in the gallery



1 Control panel

Control elements are presented as icons and are displayed only when required only.

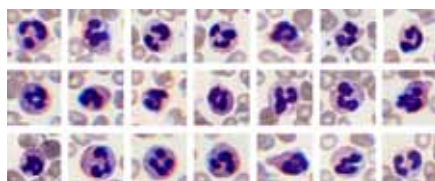
2 Cell images

All images stored in the gallery are associated with a certain section in the object tree.

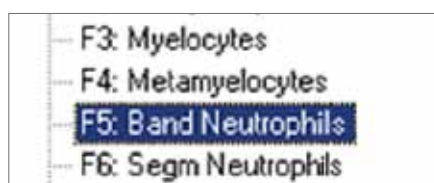
3 Object tree

Object tree is an organized customizable structure of cell types included in the differential count.

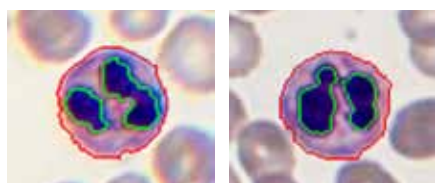
Working with blood cells



View the gallery of blood cells classified into types.



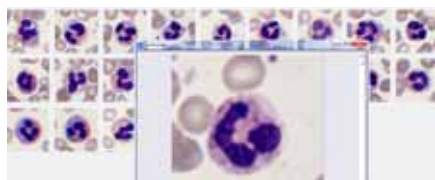
Verification of the classification is done in one click — and the object moves from one section to another.



Correction of cytoplasm and nucleus segmentation.



Repeated microscopic examination of objects displayed in the gallery.



A detailed study of a single cell allows for a more comprehensive examination of the object of interest.

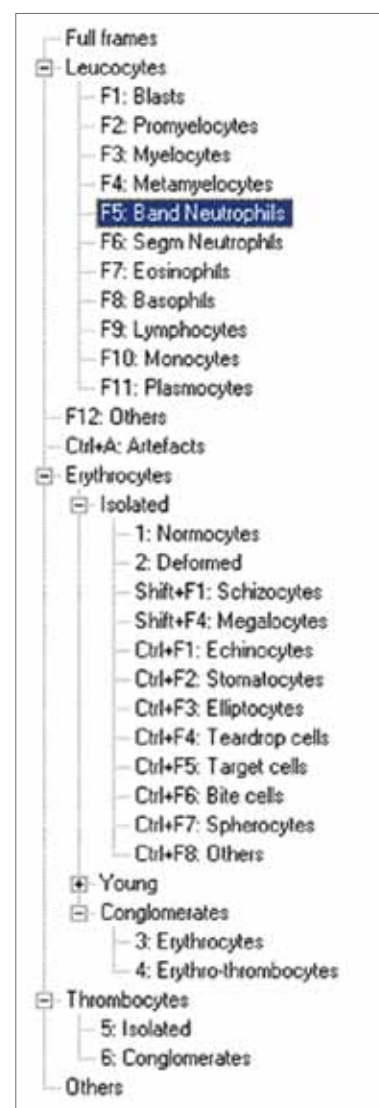


Morphometric parameters are calculated for every object.

Object tree

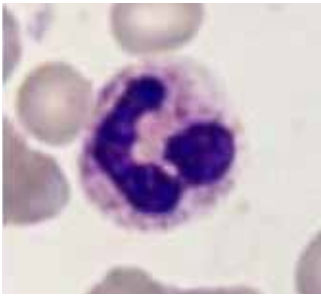
You can add your own blood cell groups, place in them unidentified cells and carry out morphological measurements.

Each section may include any number of subsections.



Morphological analysis

Morphometric parameters

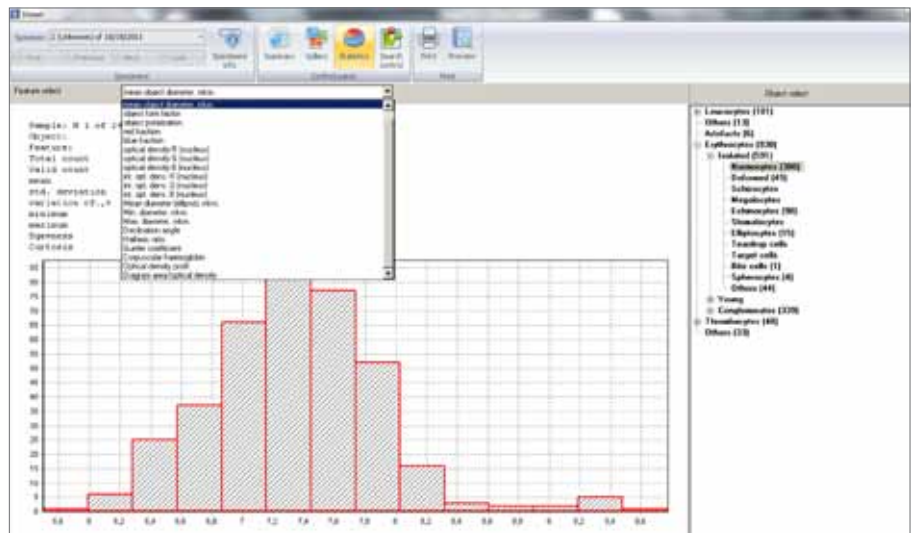


- cell area
- mean diameter
- shape factor
- polarization index
- number of nucleus fragments
- nucleus area
- mean nucleus diameter
- nucleus shape factor
- nucleus polarization index
- nuclear cell ratio
- nuclear-cytoplasmic ratio
- nucleus bulging
- number of nucleus segments
- specific optical density of the nucleus and cytoplasm

Statistics of morphometric parameters

Distribution histogram of morphometric parameters of a selected group of cells

Select a group of cells and set a morphometric parameter for the system to generate a distribution histogram.

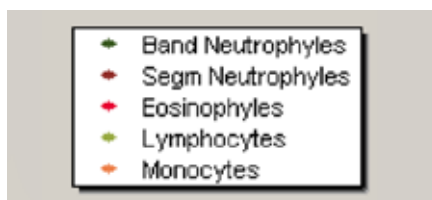
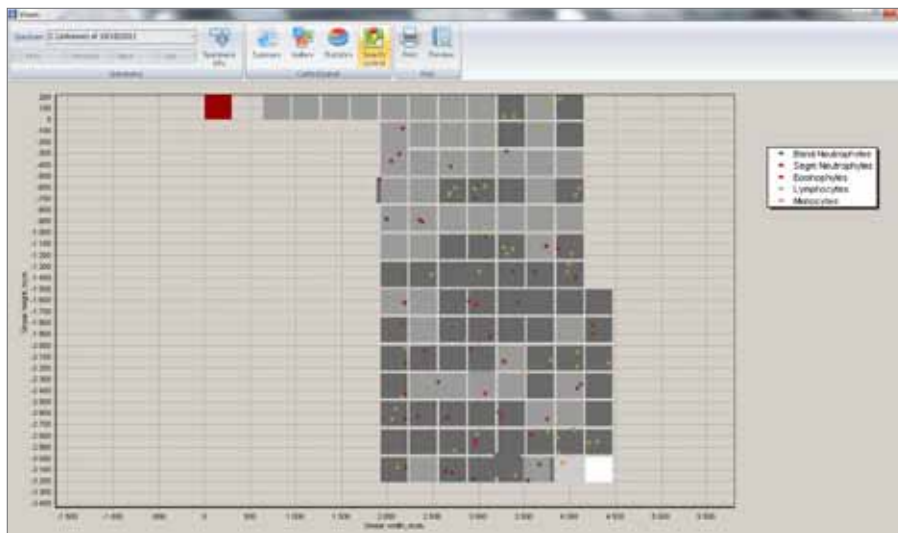


Leucocyte distribution

Detection control

Scanning path and marks for detected leucocytes with a certain color for each type

Evaluation of sample preparation quality, its thickness and leucocyte distribution.



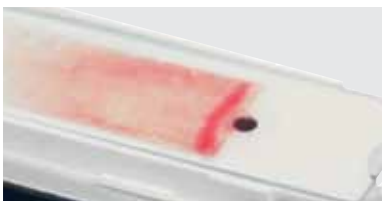
It's much easier to view an automatically generated gallery of blood cells on the computer screen rather than to spend hours looking into microscope eyepieces



Quality control

V-Sampler

Device for standardized blood smear preparation



- easy to use
- standardized process for blood smear preparation of high quality
- simultaneous preparation of two smears
- adjustable settings for thickness and size of a smear
- compact and lightweight

Assessment of reproducibility and accuracy of results

Warnings about problems and errors, in order to correct the procedure of blood smear preparation or perform maintenance of the functional parts of the system.

Quality control is performed for the following parameters:

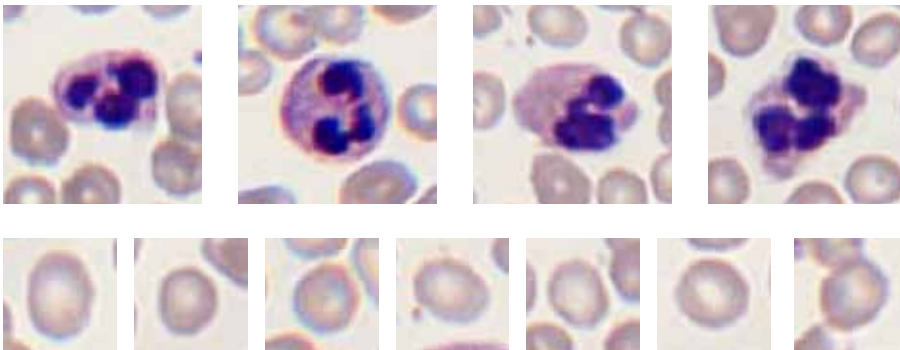
- WBC count after correction vs. manual count
- WBC count before correction vs. manual count
- WBC count before and after correction
- RBC count before and after correction
- WBC classification error matrix for all
- Separate WBC classification error matrices
- RBC classification error matrix for all
- Separate RBC classification error matrices

Real \ Calculated	Normocyte s	Schizocyt es	Megalocyt es	Deformed	Echinocyt es	Stomatocyt es	Micro-ellipto cytes	Elliptocyte s	Macro-ellipto cytes	Tear drop cells	Target cells	Site cells	Spherocyt es	Others	Erythrocyt es	Precision, %
Normocytes	328															100,0
Schizocytes																
Megalocytes																
Deformed				28												100,0
Echinocytes					35											100,0
Stomatocytes																
Micro-elliptocytes																
Elliptocytes								15								100,0
Macro-elliptocytes																
Tear drop cells																
Target cells																
Site cells																100,0
Spherocytes																100,0
Others															44	100,0
Erythrocytes															295	100,0
Precision, %	100,0			100,0	100,0			100,0				100,0	100,0	100,0	100,0	100,0

RBC quality classification

Image editor and atlas of digital samples

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



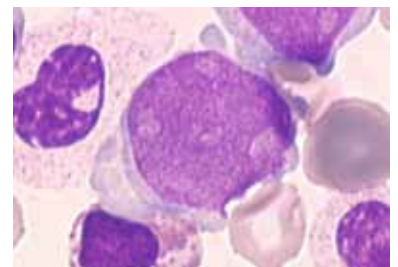
There is a date, ID and name of every digital sample displayed in the editor. Select a sample in the gallery to display automatically all the its frames, that can be scaled freely.

Use the editor to perform the following tasks:

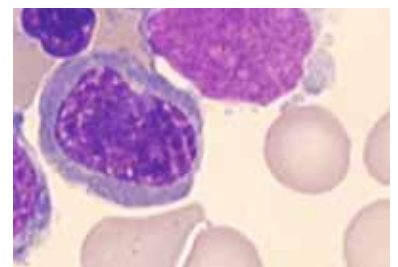
- import microscopic frames captured in external programs
- copy or move frames from one sample to another
- perform frame specific actions “Overlay” and “Wide focus”

Atlas of microscopic objects is a customizable hierarchical database

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



Refractory anemia with excess blasts



Ringed sideroblasts

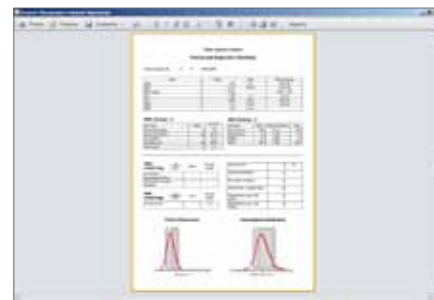
Report generation



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



Professional report



Report is generated based on analysis results and includes all the information on the conducted examination:

- laboratory details
- patient information
- leucocytes count
- erythrocytes count
- leucocytes morphology
- erythrocytes morphology
- price-Jones curve (erythrocyte diameter distribution)
- hemoglobin distribution

Database

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.

Connect multiple workplaces to one database, sharing a common information space. Import/export data to integrate into other information networks (LIS/HIS).



If required, add more fields using the settings



Vision Hema offers a wider cell differential count and the possibility to view cells provides an additional visual control if there is a need to confirm the analysis



Digital sample preparation (option)

Scanning of any microscopic slide and generation of a digital sample for research and education

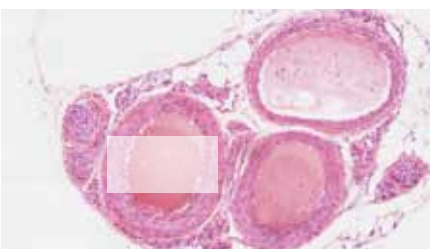
1

Create a digital sample

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



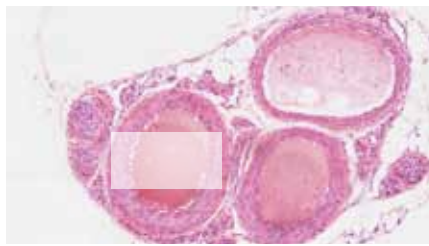
Set the required parameters: size, thickness and location of the object, and autofocus if required. After that Vision system will prepare a complete digital sample automatically.



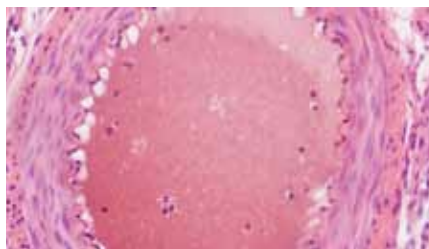
2

Select a specific area of the digital sample

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



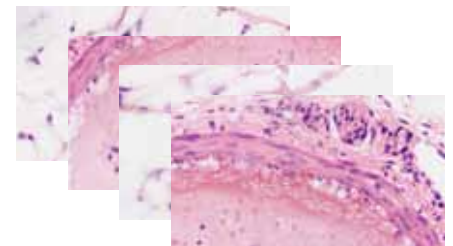
This will provide additional quantitative information, as well as significantly improve the detalization of a specific area of the primary image.



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.

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 Hema
	Motorized biological 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 Hema software, high resolution monitor and color printer.	✓
	Automatic blood smear scan, count and classification of blood cells: leucocytes, erythrocytes and platelets, including differential count into 11 groups.	✓
	Morphological analysis of leucocytes and erythrocytes. Classification.	✓
	Quality control assesses correct preparation of the blood smear and automatic functions of the system.	✓
	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.	✓
	Customizable reference guide of study objects.	✓
	Report contains: information about the laboratory and patient, leucocytes count, erythrocyte count, cell morphology, Price-Jones curve and hemoglobin distribution.	✓
	Database stores all digital samples and analysis results. Statistic handling, quick search and integration into other information networks (LIS/HIS).	✓

Ordering information



Description	Code
<p>Vision Hema system Set includes: MT5300H M motorized trinocular microscope, Vision CAM V1600 digital camera, Vision Hema software, PC, monitor, printer.</p>	70.0101.00
Additional	
<p>Vision Slide software Virtual sample preparation in microscopy.</p>	20.0102.01
<p>V-Sampler Blood smear preparation device.</p>	80.0001.00



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We reserve the right to change specification without notice.

Official distributor

Rev 3.1/11.2011 EN