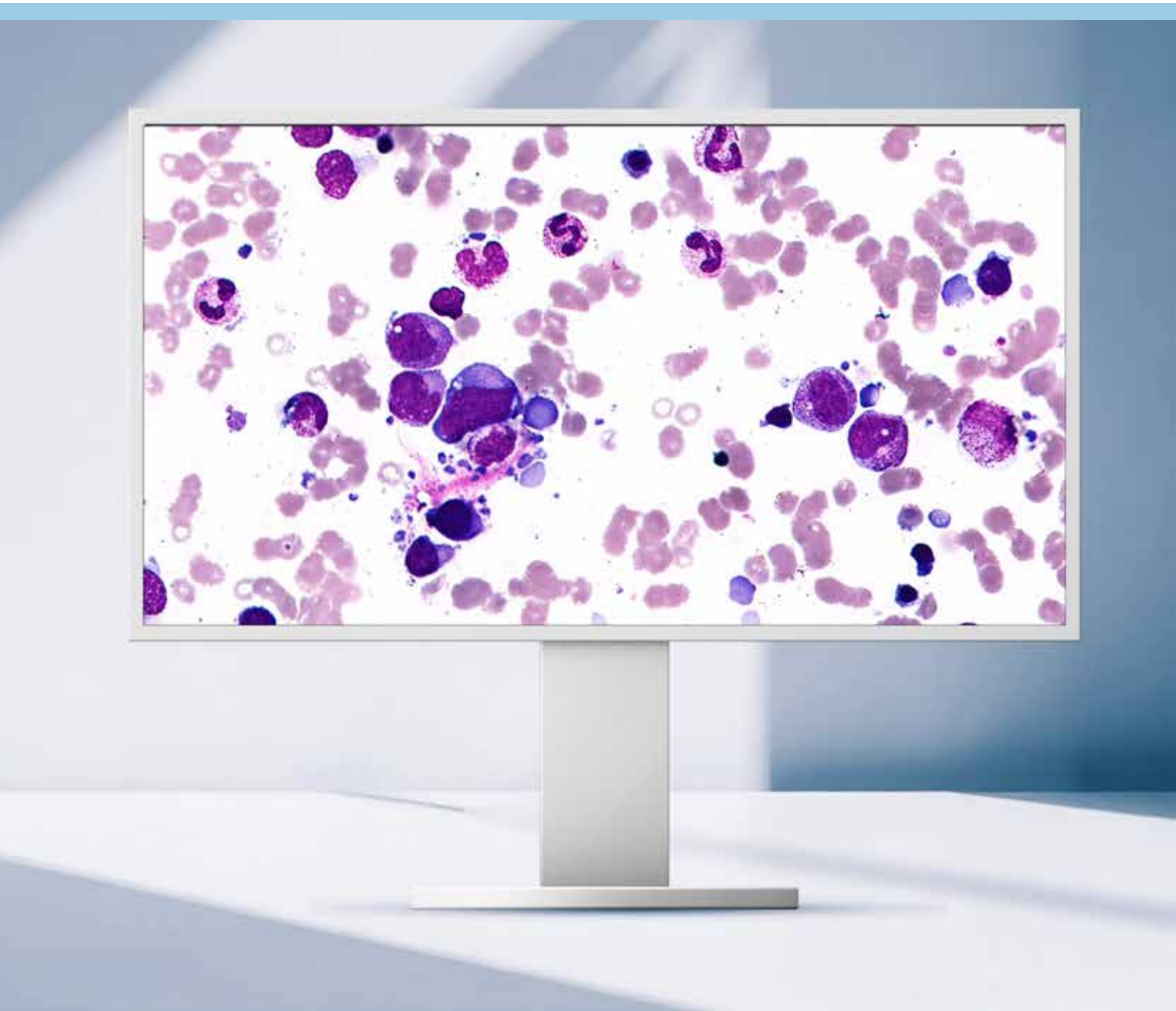
MicroOptix

AUSTRIA

AUTOMATION AND DIGITALIZATION OF MICROSCOPY

MicroOptix Catalogue



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MICROOPTIX SOLUTION CONFIGURATIONS **43**



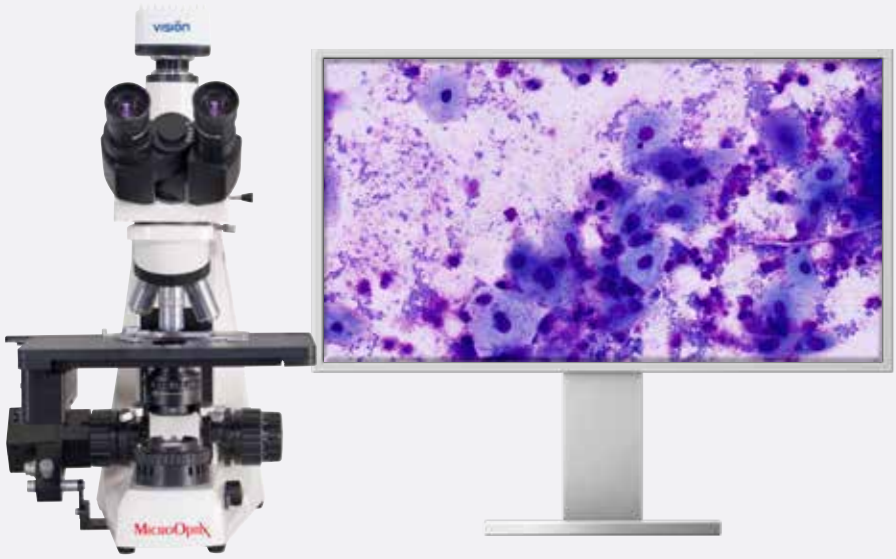
MICROSCOPES

MX 500
Biological microscope



	Biological microscope MX 500
Viewing head	— trinocular head — 360° rotatable, 30° inclined, diopter adjustment on the left eyepiece tube, interpupillary distance 53–75 mm — ergonomic viewing head with adjustable 10–50° inclination (optional)
Wide-field eyepieces	10×/22 mm
Stand	metal
Revolving nosepiece	5-position
Objectives	4×, 10×, 40×, 100× oil Optional: 20×, 50× oil, 60× oil
Stage	graduated mechanical XY stage with a two-slide holder
Condenser	height-adjustable Abbe condenser with iris diaphragm, NA 1.25
Focusing mechanism	— coaxial coarse and fine focusing knobs — built-in focus lock mechanism to protect the specimen and allow for quick adjustments when changing samples — focus tension adjustment mechanism
Light source	LED
Power supply	220 V/50 Hz
Operating temperature, humidity	18–35 °C, less than 85%
Observation methods	brightfield. Optional: darkfield, phase contrast, polarization

MX 500 (M)
Automatic microscope



	Automatic microscope MX 500 (M)
Viewing head	— trinocular head — 360° rotatable, 30° inclined, diopter adjustment on the left eyepiece tube, interpupillary distance 53–75 mm — ergonomic viewing head with adjustable 10–50° inclination (optional)
Wide-field eyepieces	10×/22 mm
Stand	metal
Revolving nosepiece	5-position
Objectives	4×, 10×, 40×, 100× oil Optional: 20×, 50× oil, 60× oil
Stage	motorized, for one microscope slide
Condenser	— height-adjustable Abbe condenser with iris diaphragm — universal Zernike phase-contrast condenser (optional)
Focusing mechanism	automatic (movement along the Z-axis)
Light source	LED
Power supply	220 V/50 Hz
Operating temperature, humidity	18–35 °C, less than 85%
Observation methods	brightfield. Optional: darkfield, phase contrast, polarization

MX 600
Fluorescence microscope





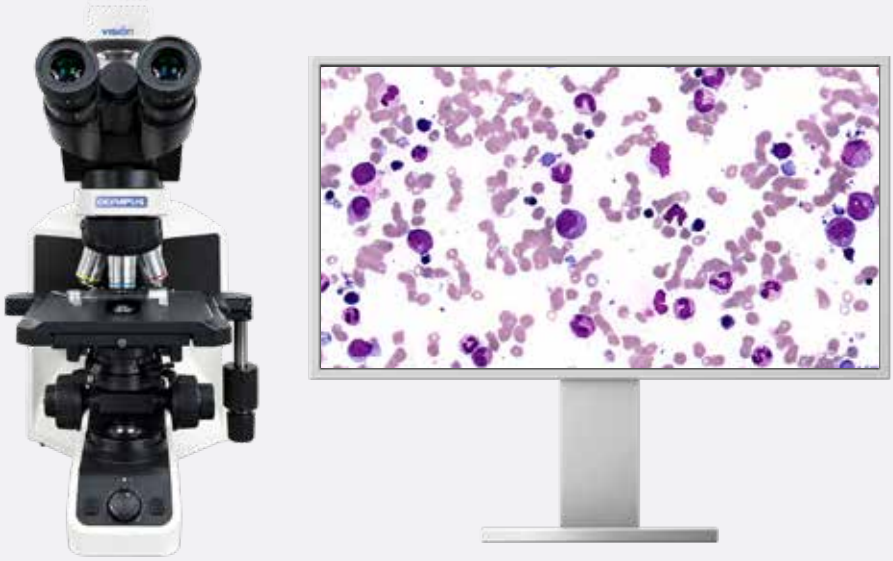
	Fluorescence microscope MX 600
Viewing head	— trinocular head — 360° rotatable, 30° inclined, diopter adjustment on the left eyepiece tube, interpupillary distance 53–75 mm — ergonomic viewing head with adjustable 10–50° inclination (optional)
Wide-field eyepieces	10×/22 mm
Stand	metal
Revolving nosepiece	5-position
Objectives	10×, 20×, 40×, 100× oil Optional: 4×
Stage	graduated mechanical XY stage with a two-slide holder
Condenser	height-adjustable Abbe condenser with iris diaphragm, NA 1.25
Focusing mechanism	— coaxial coarse and fine focusing knobs — built-in focus lock mechanism to protect the specimen and allow for quick adjustments when changing samples — focus tension adjustment mechanism
Epifluorescence lamp	CoolLED, mercury-free
Light source	LED
Power supply	220 V/50 Hz
Operating temperature, humidity	18–35 °C, less than 85%
Observation methods	fluorescence, brightfield, darkfield

MX 600 (M)
Automatic microscope



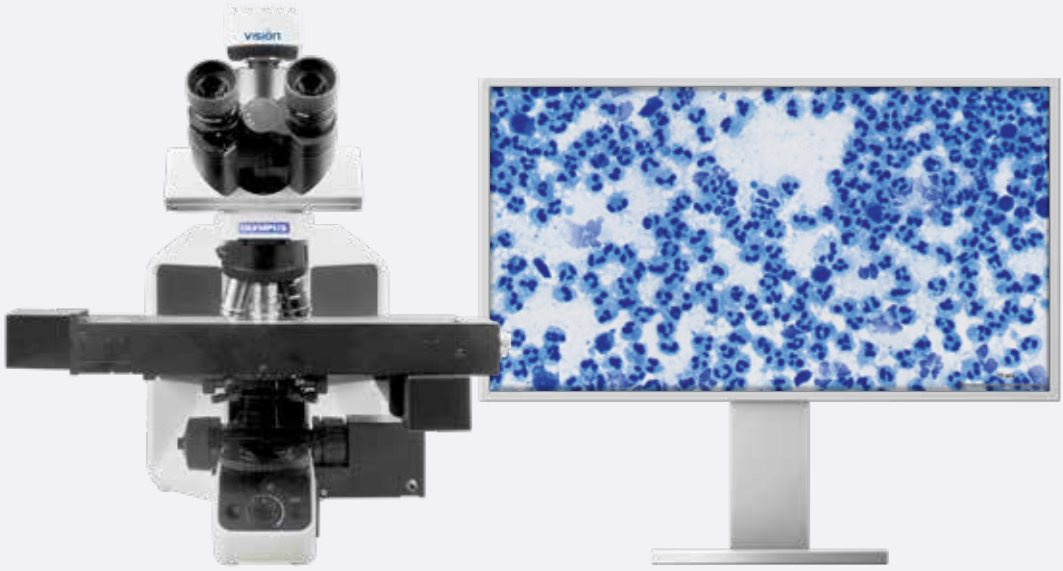
	Automatic microscope MX 600 (M)
Viewing head	— trinocular head — 360° rotatable, 30° inclined, diopter adjustment on the left eyepiece tube, interpupillary distance 53–75 mm — ergonomic viewing head with adjustable 10–50° inclination (optional)
Wide-field eyepieces	10×/22 mm
Stand	metal
Revolving nosepiece	5-position
Objectives	10×, 20×, 40×, 100× oil Optional: 4×
Stage	motorized, for one microscope slide
Condenser	height-adjustable Abbe condenser with iris diaphragm, NA 1.25
Focusing mechanism	automatic (movement along the Z-axis)
Epifluorescence lamp	CoolLED, mercury-free
Light source	LED
Power supply	220 V/50 Hz
Operating temperature, humidity	18–35 °C, less than 85%
Observation methods	fluorescence, brightfield, darkfield

BX43
Research microscope



	Research microscope BX43
Viewing head	— trinocular head — ergonomic viewing head with adjustable 0–27° inclination
Wide-field eyepieces	10×/22 mm
Objectives	optional: 4×, 10×, 20×, 40×, 60× oil, 100× oil
Stage	mechanical, for two microscope slides
Focusing mechanism	manual
Condenser	Abbe NA 1.1
Light source	LED
Power supply	110–240 V, 50–60 Hz
Operating temperature, humidity	15–30 °C, relative humidity 20–80%
Observation methods	brightfield, darkfield, phase contrast, fluorescence

BX43F
Automatic microscope



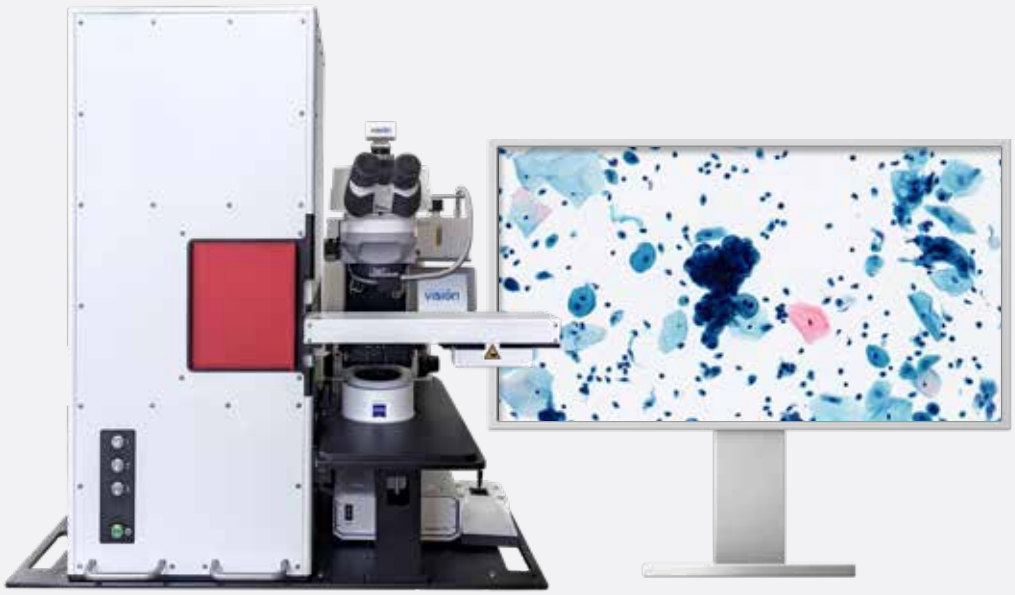
	Automatic microscope BX43F
Viewing head	— trinocular head — ergonomic viewing head with adjustable 0–27° inclination
Wide-field eyepieces	10×/22 mm
Slide loading	up to 8 slides
Objectives	optional: 4×, 10×, 20×, 40×, 60× oil, 100× oil
Stage	motorized, with a holder for 8 slides
Focusing mechanism	motorized
Components	— built-in barcode reader (optional) — automatic immersion oil dispenser (optional)
Condenser	Abbe NA 1.1
Light source	LED
Power supply	110–240 V, 50–60 Hz
Operating temperature, humidity	15–30 °C, relative humidity 20–80%
Observation methods	brightfield, darkfield, phase contrast

Axio Imager
Research microscope

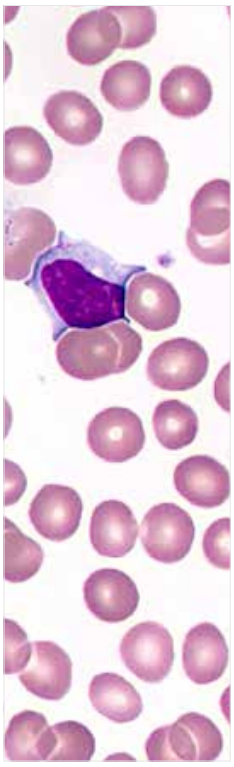
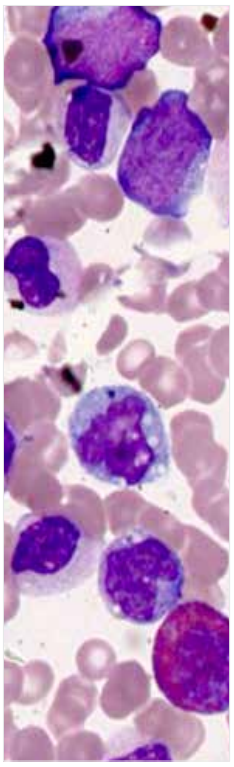
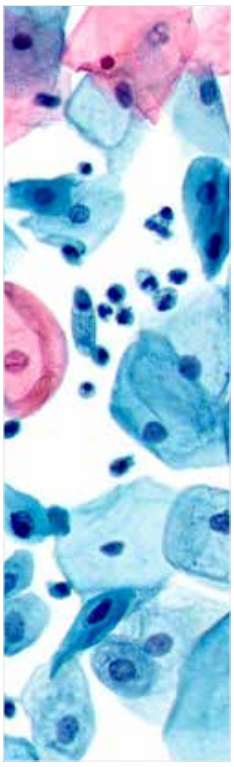
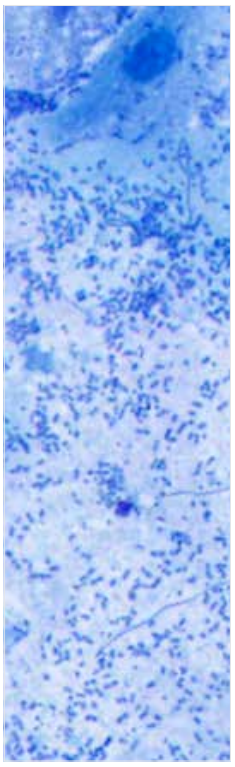
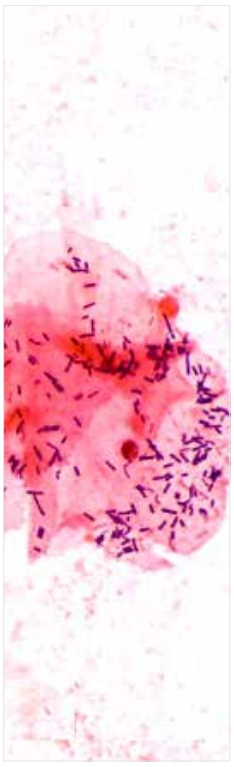


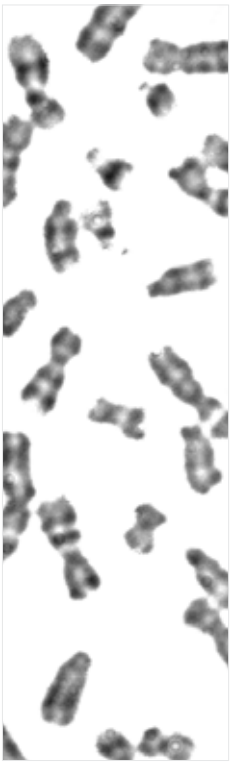
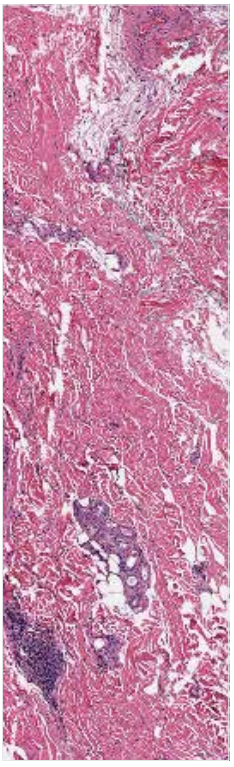
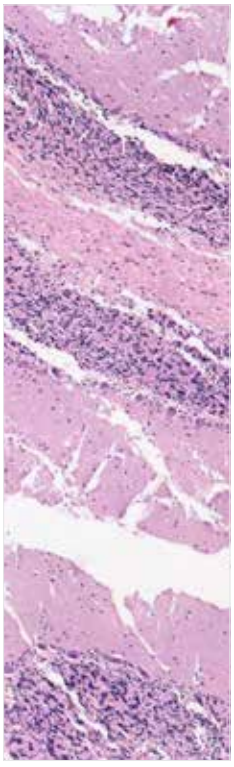
	Research microscope Axio Imager
Viewing head	trinocular head
Revolving nosepiece	manual, 6-position
Objectives	optional: 2.5×, 10×, 20×, 40×, 40× oil, 50× oil, 63× oil, 100× oil
Eyepieces	wide-field 10×/25 mm
Stage	mechanical 75 × 50 mm, two-axis, handle on the right
Focusing mechanism	— coaxial coarse and fine focusing knobs — built-in focus lock mechanism to protect the specimen and allow for quick adjustments when changing samples — focus tension adjustment mechanism
Light source	LED
Stand	manual, with a modular design
Power supply	100–240 V, 50–60 Hz
Operating temperature, humidity	15–35 °C, maximum relative humidity 75%
Observation methods	brightfield, darkfield, phase contrast, polarization, fluorescence

Axio Imager
Automatic microscope



	Automatic microscope Axio Imager
Viewing head	trinocular head
Revolving nosepiece	motorized, 7-position
Objectives	optional: 2.5×, 10×, 20×, 40×, 40× oil, 50× oil, 63× oil, 100× oil
Eyepieces	wide-field 10×/25 mm
Stage	motorized
Focusing mechanism	motorized
Components	— slide loader — built-in barcode reader — automatic immersion oil dispenser (optional)
Light source	LED, automatic control of lighting parameters
Slide loader	capacity: up to 120 slides
Stand	motorized, with a modular design
Power supply	100–240 V, 50–60 Hz
Operating temperature, humidity	15–35 °C, maximum relative humidity 75%
Observation methods	brightfield, darkfield, polarization, phase contrast, fluorescence

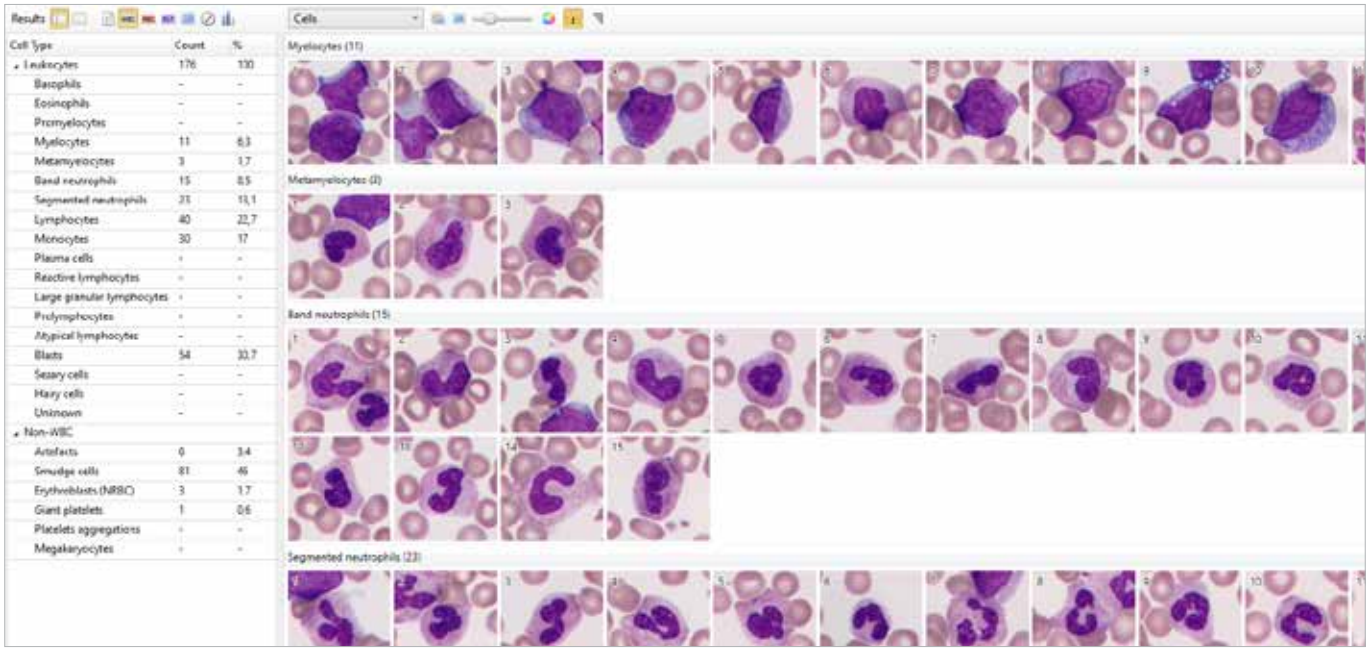







APPLICATION

Vision Morpho

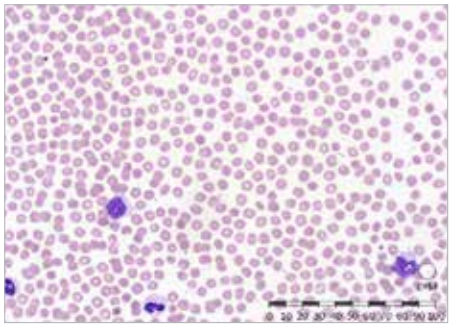
Morphology of human blood cells



Leukocyte analysis

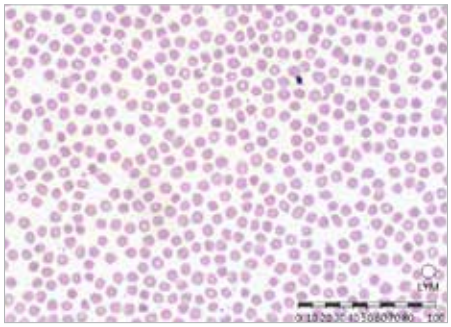
- Basophils
- Eosinophils
- Promyelocytes
- Myelocytes
- Metamyelocytes
- Band neutrophils
- Segmented neutrophils
- Lymphocytes
- Monocytes
- Reactive lymphocytes
- Blasts
- Erythroblasts

Analysis of erythrocytes and platelets



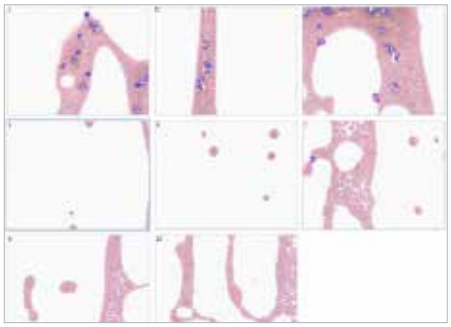
Analysis of erythrocytes

Size, color, shape, inclusions



Analysis of platelets

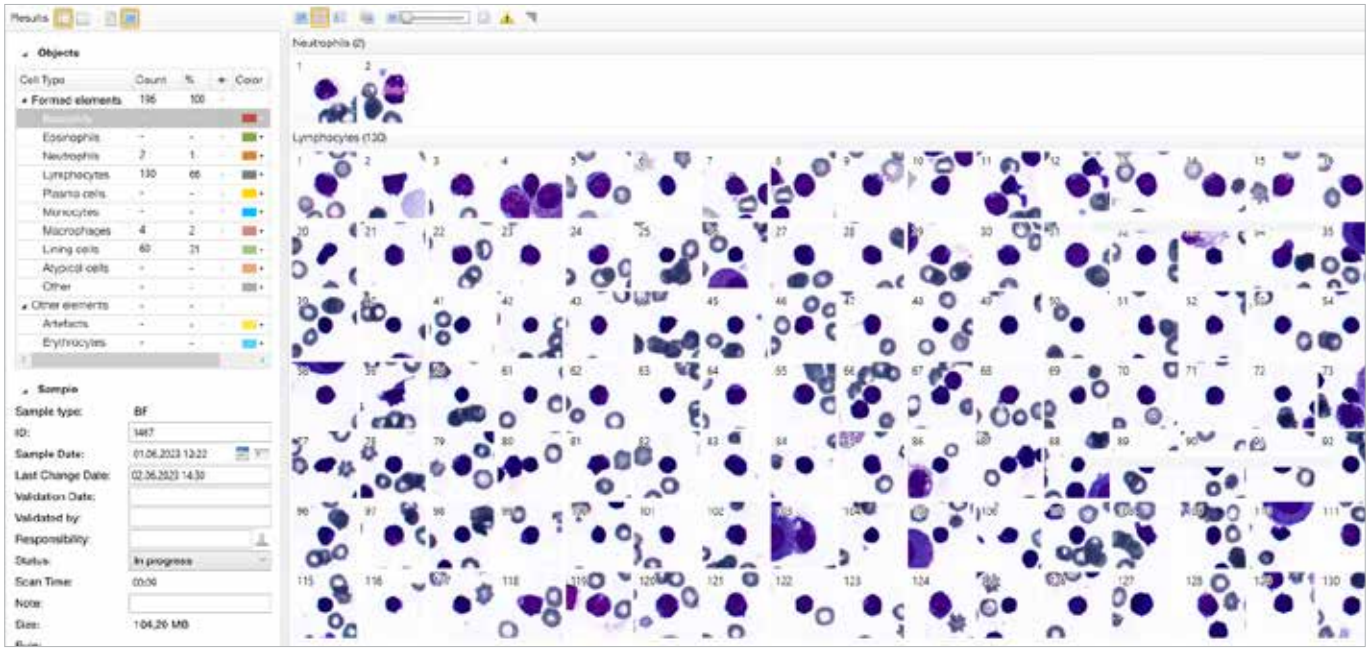
Normal, micro, macro



Feathered edge scanning

Assessment of platelet aggregation (clumping) and smear preparation quality

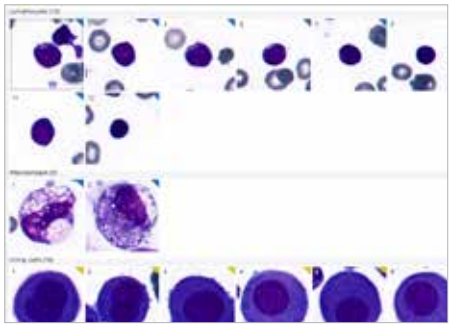
Cell morphology in body fluids



Analysis of effusions, cerebrospinal fluid, bronchoalveolar lavage

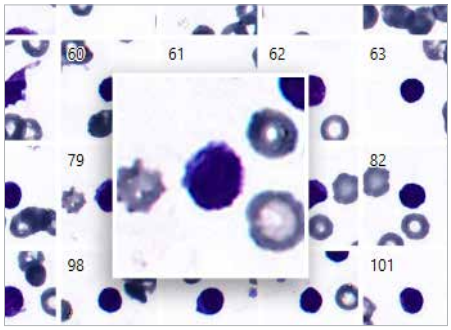
— Basophils
— Eosinophils
— Neutrophils
— Lymphocytes
— Plasma cells
— Monocytes
— Macrophages
— Lining cells
— Atypical cells

Automation of biological fluid analysis



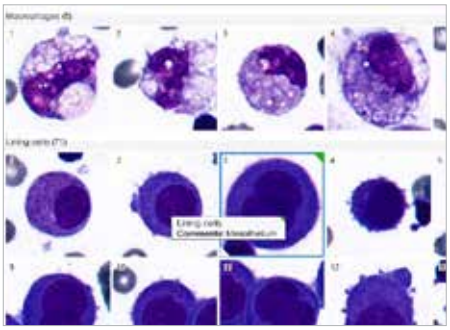
Two-stage scanning

View the digital slide at ×200 magnification and analyze at ×1000 magnification



Quick View

Single cell magnification allows quick evaluation of object morphology

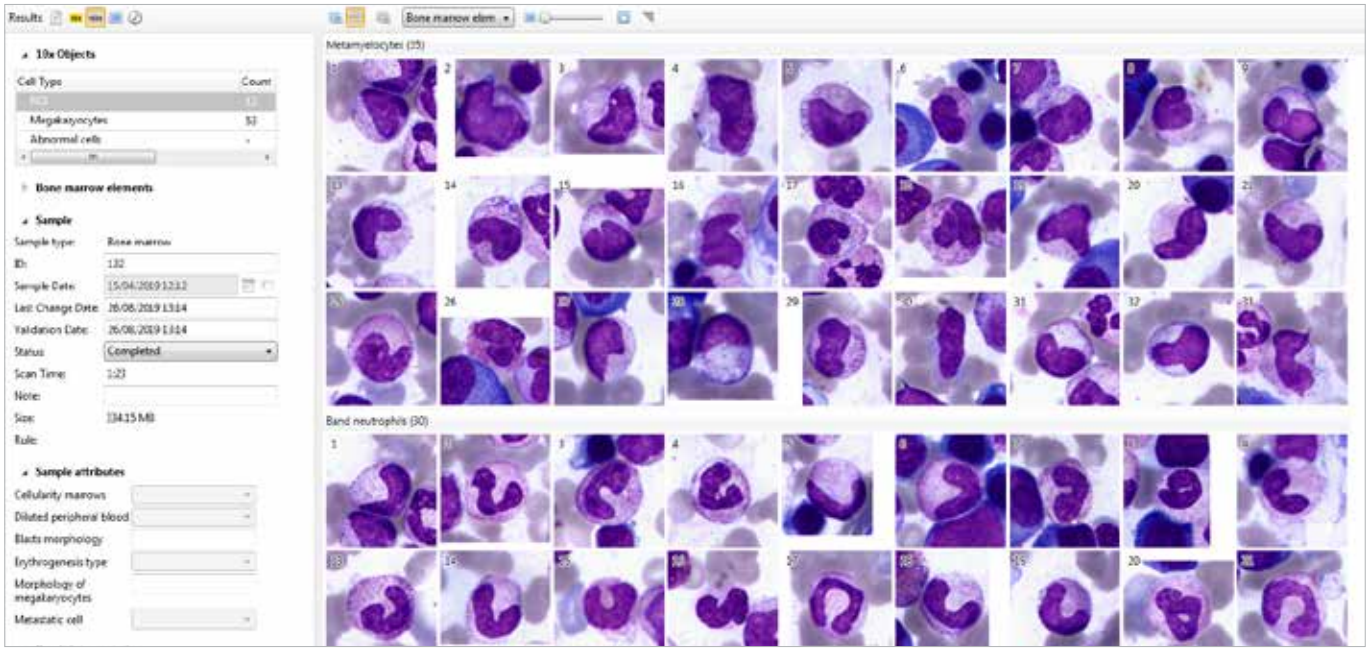


Tags and comments

Leave comments and tags directly on the cell image

Vision Hema

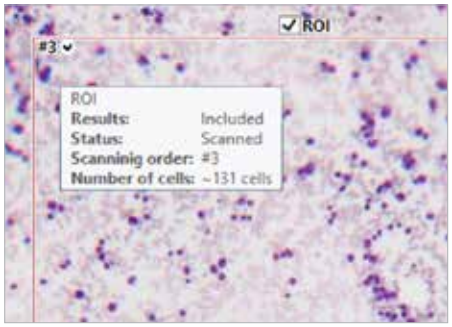
Automated bone marrow cell analysis



Analysis of bone marrow cells

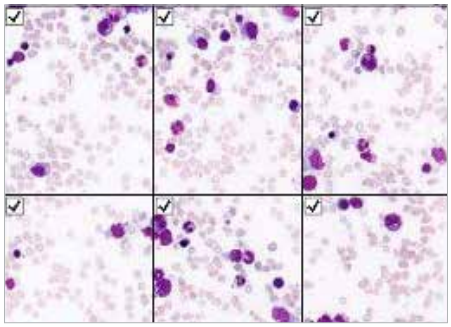
- Blasts
- Basophils
- Eosinophils
- Promyelocytes
- Myelocytes
- Metamyelocytes
- Band neutrophils
- Segmented neutrophils
- Lymphocytes
- Plasma cells
- Atypical lymphocytes
- Promonocytes
- Monocytes
- Erythroblasts
- Proerythroblasts
- Basophilic erythroblasts
- Polychromatophilic and oxyphilic erythroblasts

Digital technology in bone marrow analysis



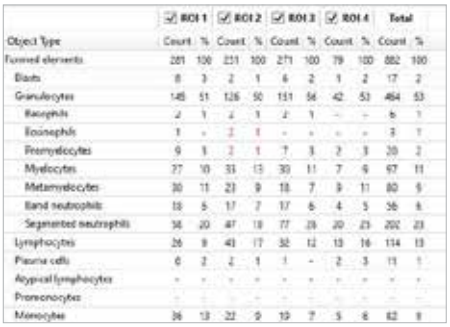
ROI cellularity assessment

Pre-counting of cells in ROI on a digital slide acquired using a 10× objective



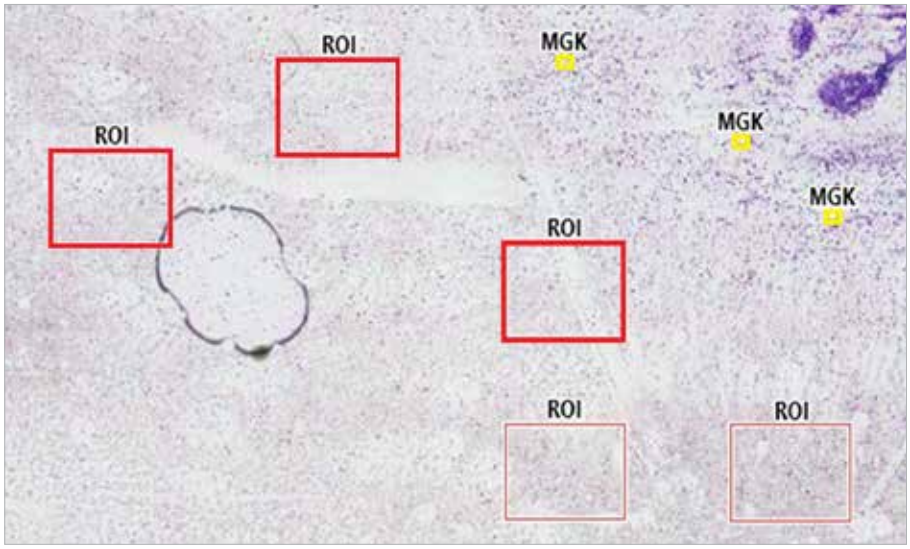
Selection of fields of view for analysis

Inclusion or exclusion of fields of view from cell counting



ROI Manager

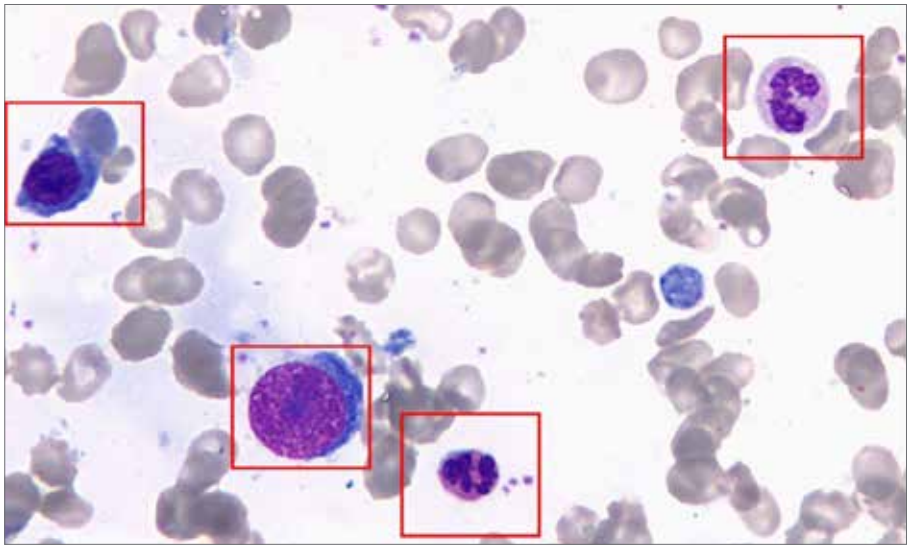
Comparison of cell counts by composition in each individual ROI



ROI[1] and megakaryocytes

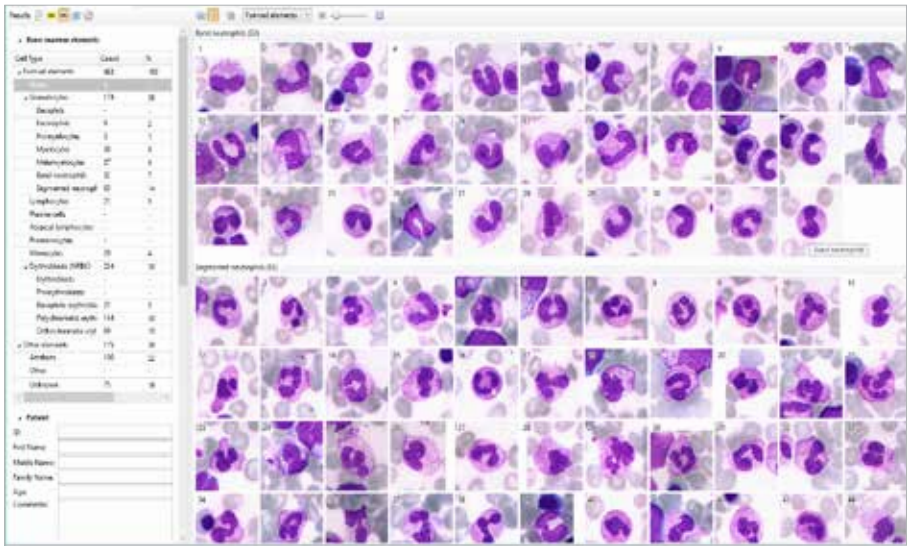
Automatic region of interest (ROI) detection and identification of megakaryocytes (MGK)

[1] ROI (region of interest) is an area with evenly distributed bone marrow cells. In these areas, cells are searched and captured at ×1000 magnification



Extended focus

Clear image of each bone marrow cell thanks to the extended focus. Independent focus in the Z-plane on every single bone marrow cell

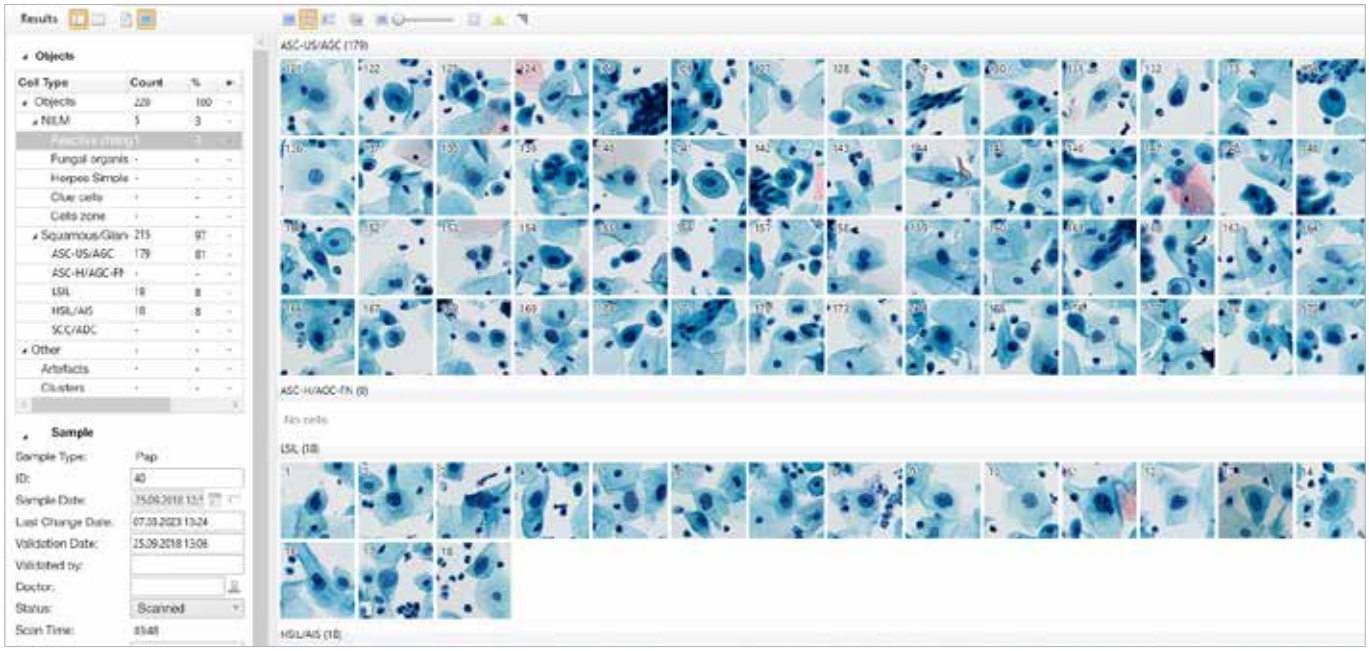


Low-cellularity sample mode

Scanning algorithm for low-cellularity samples. Automated analysis of challenging specimens that are time-consuming to evaluate manually.

Vision Cyto

Automated cervical screening



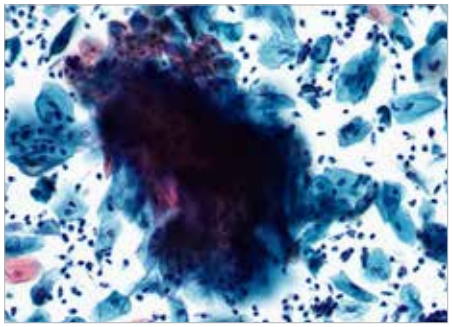
Analysis by Bethesda classification

NILM
— Reactive changes
— Fungi
— Clue cells
— Transformation zone cells

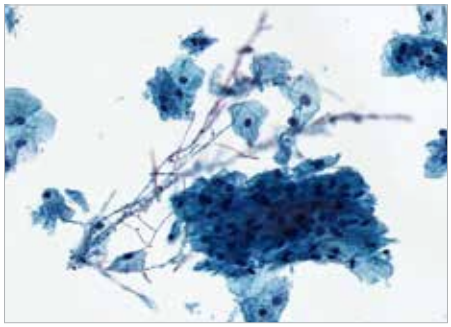
Clusters

Squamous / Glandular
— AGC
— ASC-US
— ASC-H
— LSIL
— HSIL
— SCC

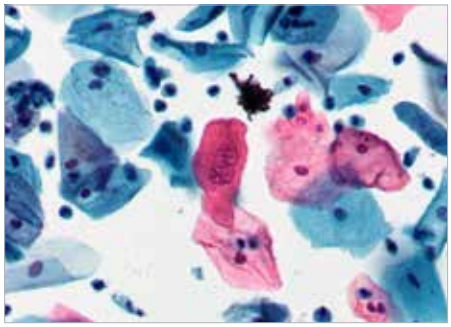
Examples of cells by Bethesda classification



Clusters

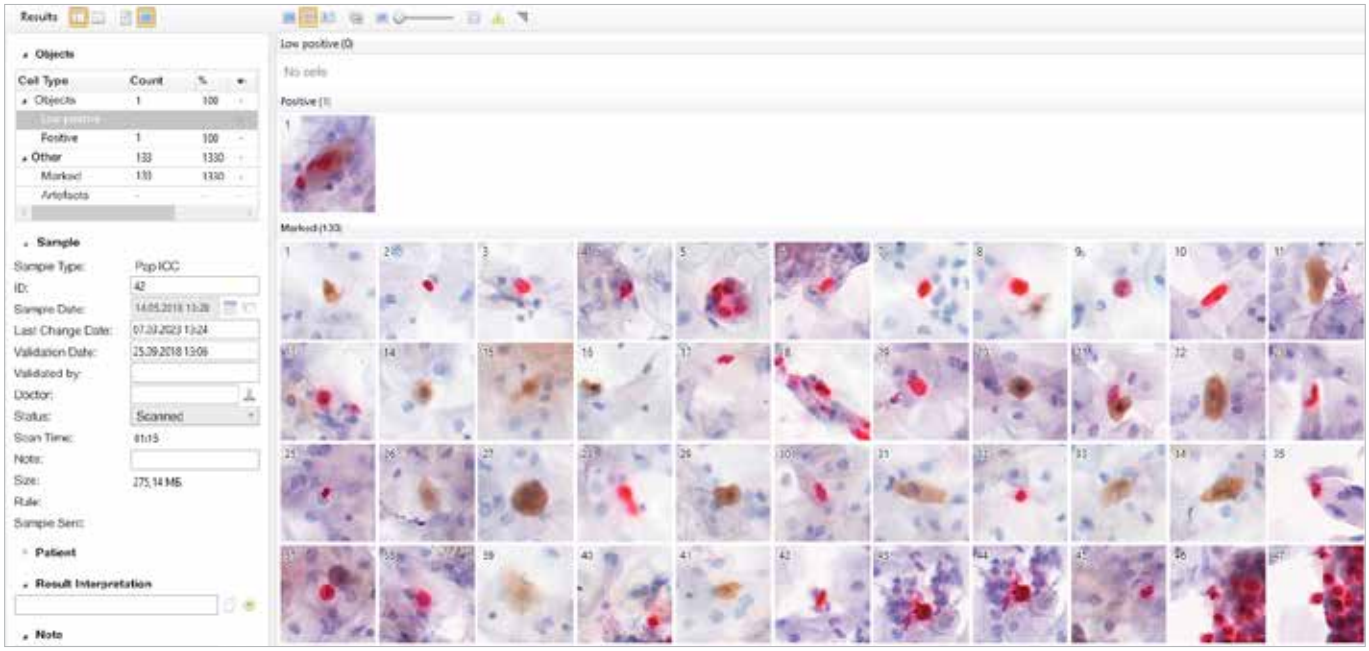


Fungi



LSIL

Automated evaluation of immunocytochemical reaction



Analysis of cells with cytoplasmic and nuclear reactions

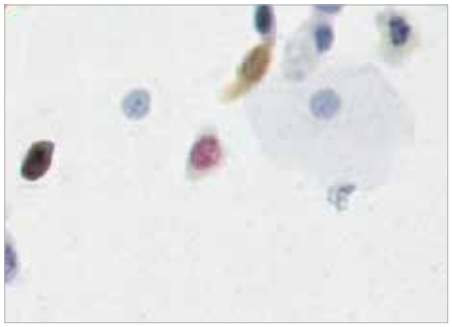
— Additional study for cervical cytology

— Evaluation of co-expression of oncoproteins p16/Ki67

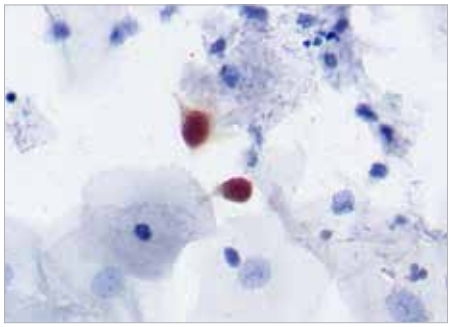
— Automated analysis of cells with cytoplasmic and nuclear reaction: weakly positive, positive cells

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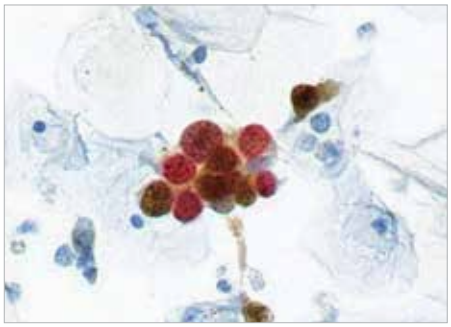
Examples of cells with cytoplasmic and nuclear reactions



Weakly positive reaction



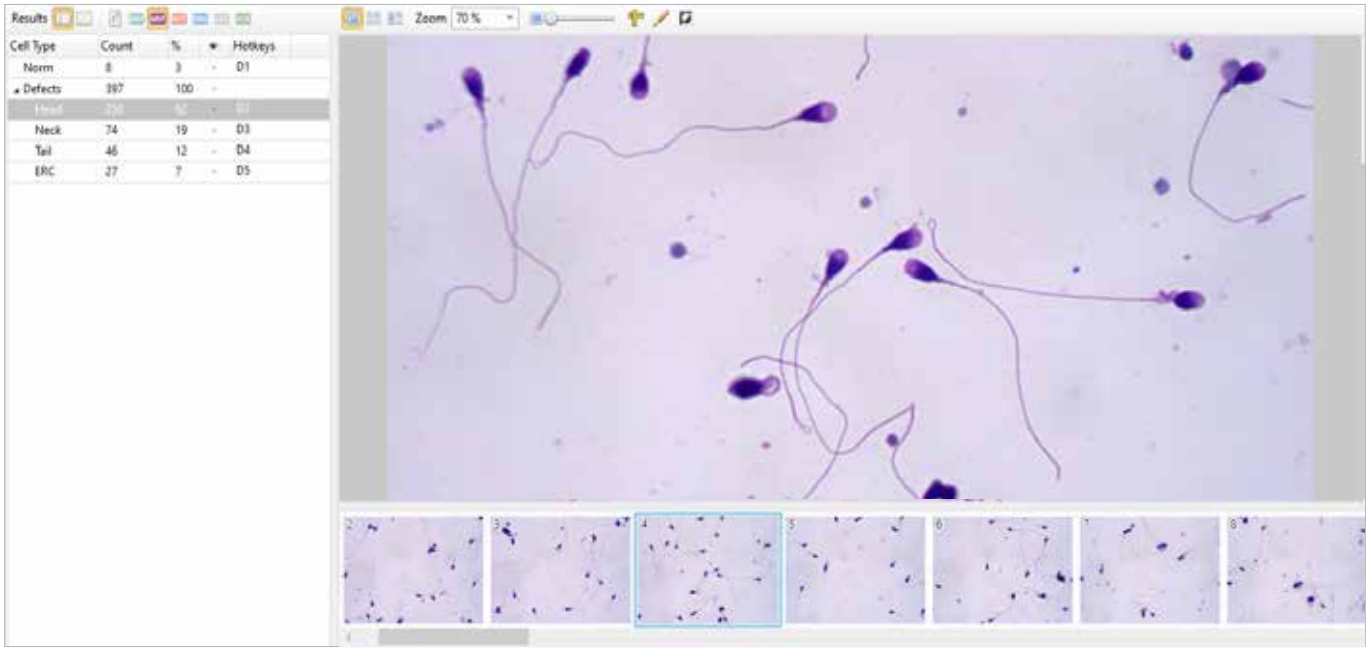
Positive reaction



Positive reaction

Vision Sperm

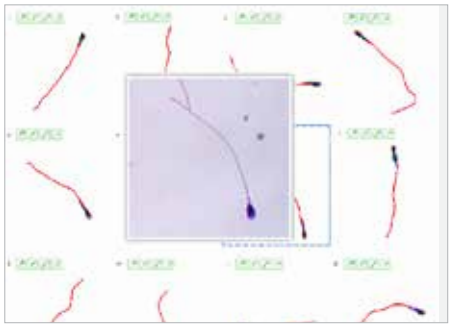
Automated computer-assisted sperm analysis (CASA)



Analysis of sperm parameters according to WHO 5th or 6th edition requirements

- Motility/Concentration
- DNA fragmentation
- Morphology
- Leukocytes
- Vitality
- Acrosome reaction

View sperm gallery



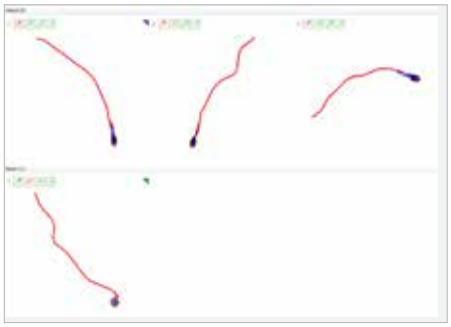
Quick view

Single cell magnification allows quick evaluation of object morphology



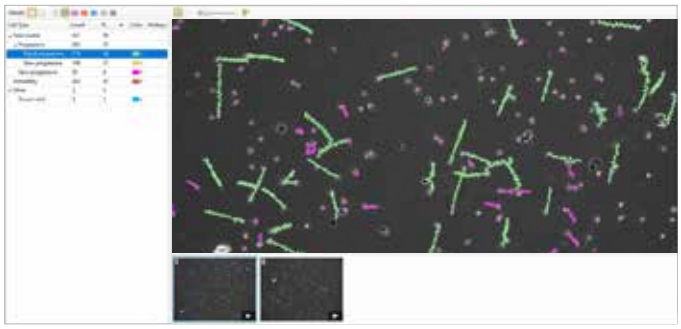
Tooltips

When you hover over a cell, a tooltip pops up with additional information about the object



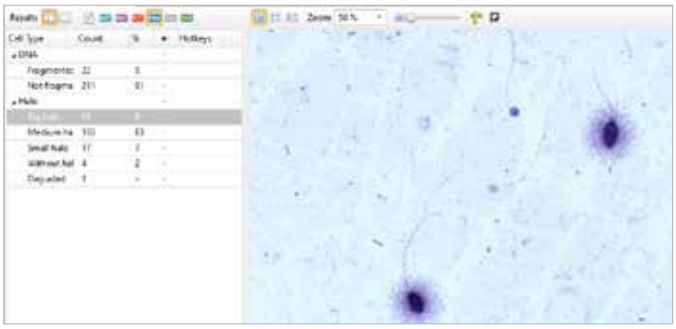
Group selection

Displays only tagged cell images



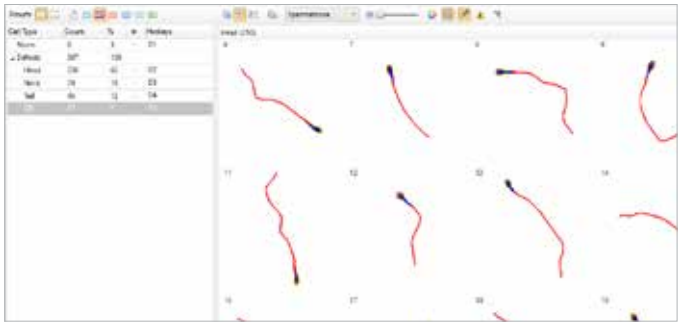
MOT **Motility/Concentration**

Motility analysis and concentration assessment.
Motility: sperm trajectories within the field of view over a set time period.
Concentration: total sperm count, adjusted for sample depth and dilution. Round cell concentration calculation.



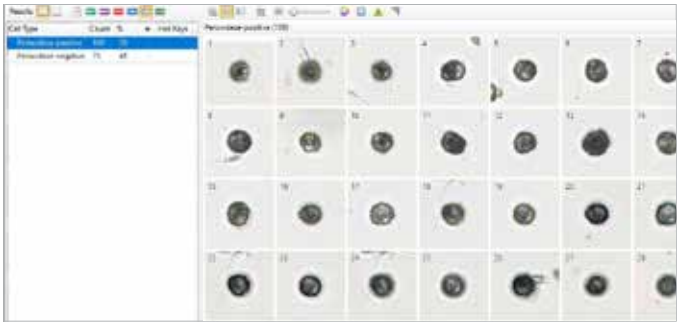
DNA **DNA fragmentation**

Pre-classification by DNA fragmentation degree. Calculation of the ratio of fragmented to non-fragmented (intact) spermatozoa.



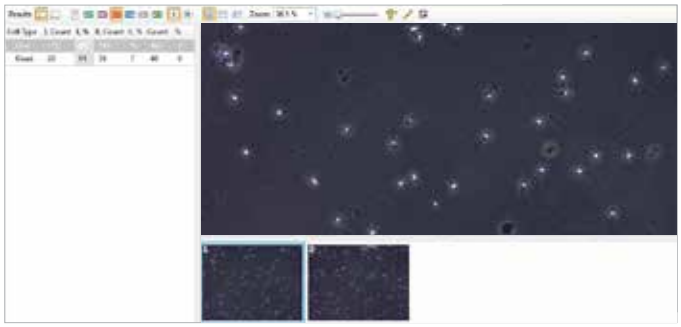
MRF **Morphology**

Sperm morphology analysis.
Defect types: head, neck/midpiece, tail and ERC.
Calculation of the Teratozoospermia Index (TZI) and the Sperm Deformity Index (SDI).



LEU **Leukocytes**

Content of peroxidase-positive and peroxidase-negative round cells. Calculation of round cell concentration.



VIT **Vitality**

Pre-classification of sperm vitality, calculation of the percentage of live and dead spermatozoa

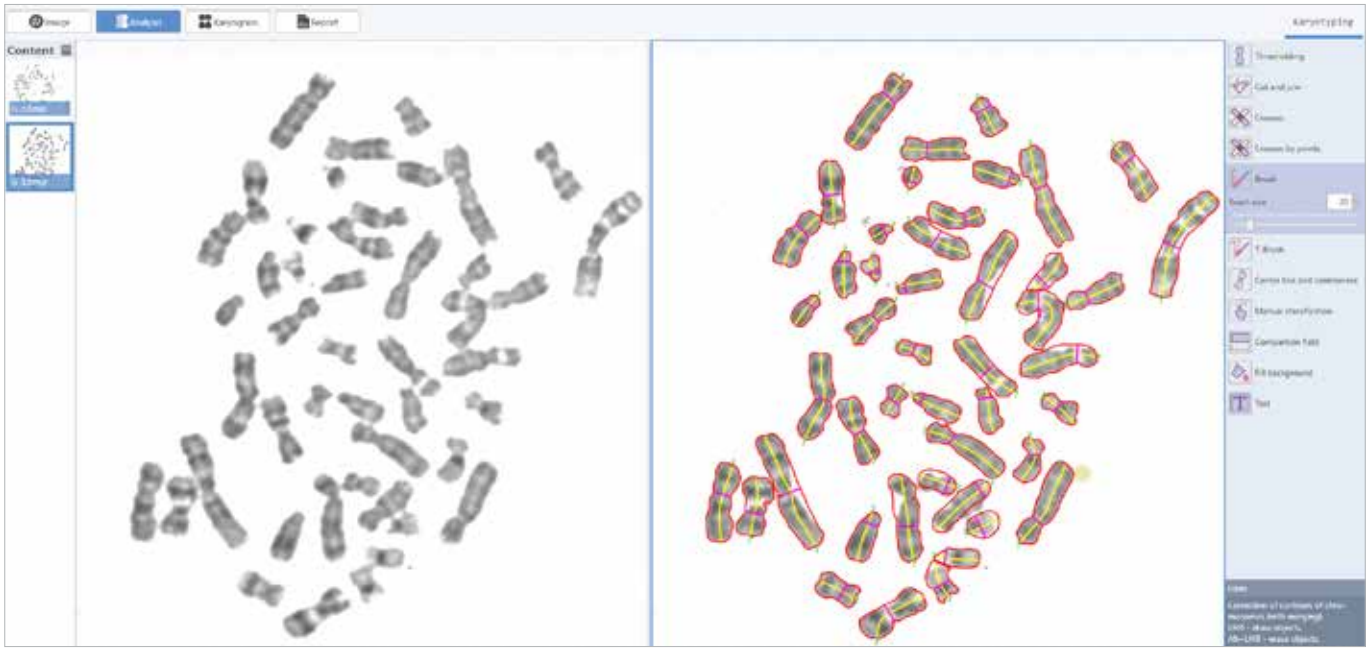


ACR **Acrosome reaction**

Acrosome reaction test

Vision Karyo

Automated chromosome karyotyping



Key features

— High accuracy of automatic karyotyping of chromosomes, construction of idiograms

— Automatic recognition of human chromosomes

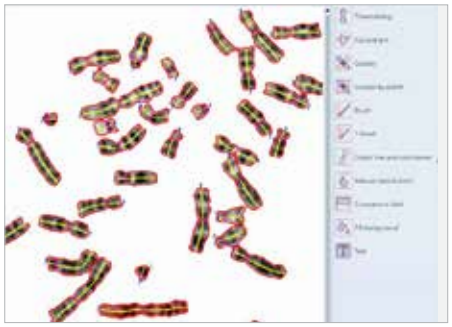
— Automatic separation of overlapping and touching chromosomes

— Editing a karyogram: repositioning, rotation, straightening of chromosomes

— Creating your own idiogram databases

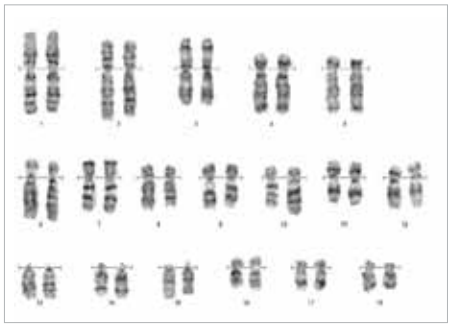
— Comparison of chromosomes and/or idiograms

Vision Karyo features



Chromosome separation

Automatic separation of overlapping and contacting chromosomes



Karyogram

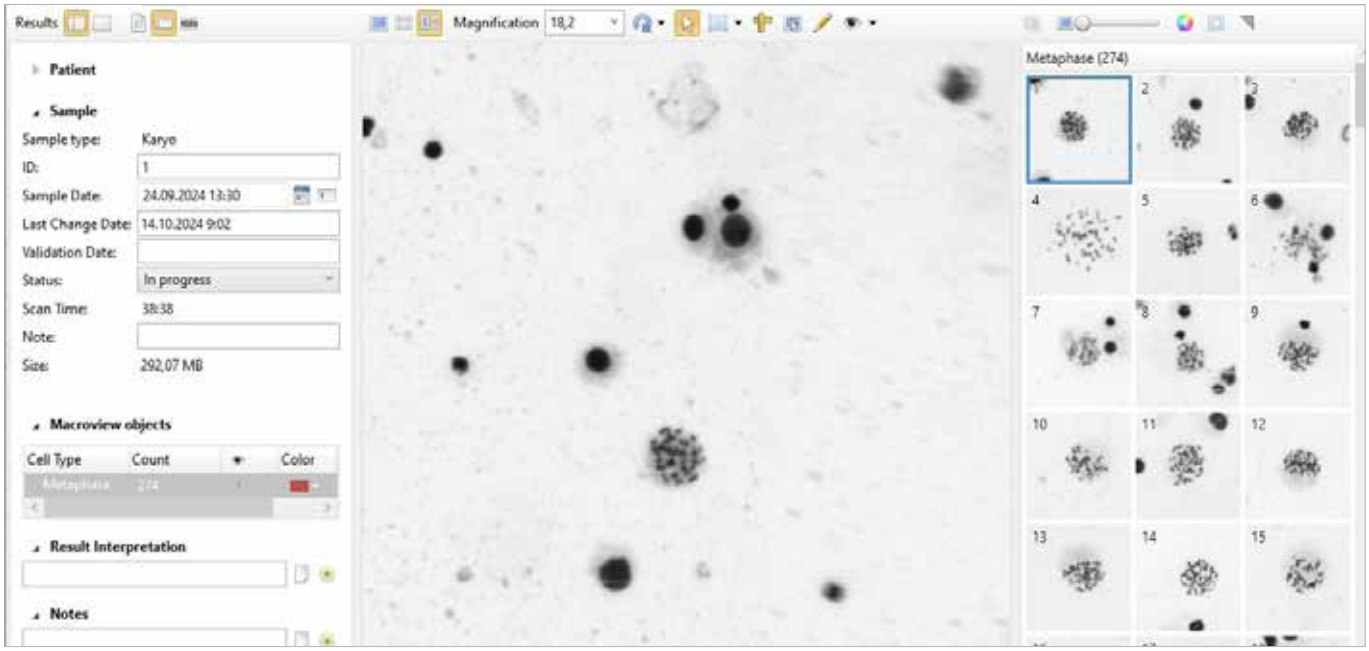
Automatic karyogram construction, editing



Documentation

Automatic report generation

Automated metaphase plate analysis



Analysis, search and collection of metaphase plates

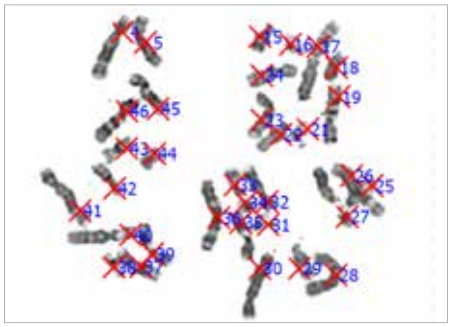
— Creation of a digital slide
— Metaphase plate identification
— Metaphase plate collection
— Metaphase plate image gallery
— Metaphase image stitching
— Metaphase plate relevance analysis

Collection of metaphase plates at high magnification



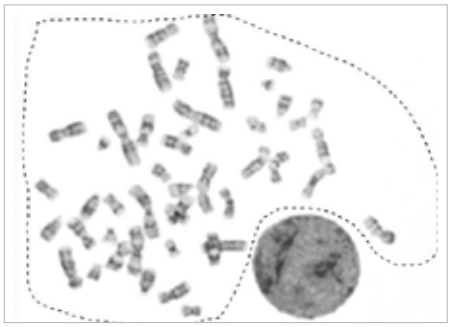
Image correction

Banding enhancement, brightness and contrast adjustment, image sharpening



Manual counting

Counting the number of chromosomes in the image of the metaphase plate manually

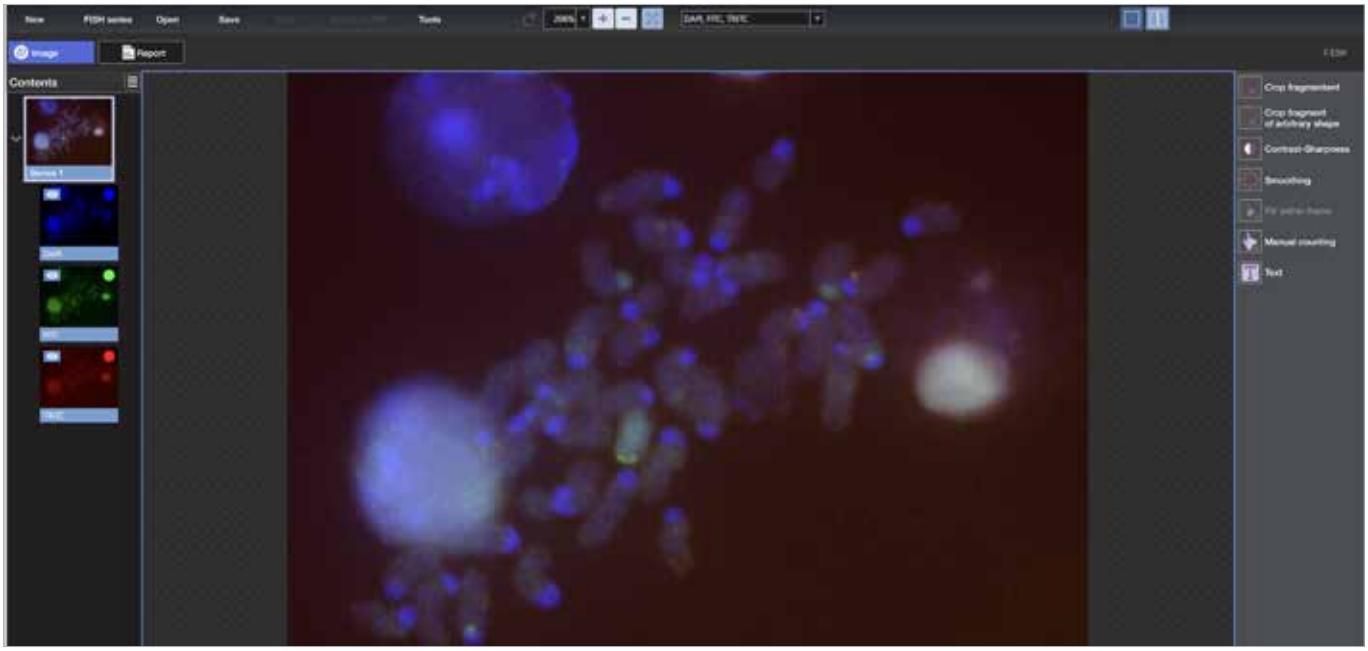


Fragment cropping

Cropping the image area containing chromosomes for analysis

Vision KaryoFISH

FISH analysis and chromosome karyotyping



Key features

— Automatic acquisition of a composite color-coded image from monochrome images obtained with different light filters

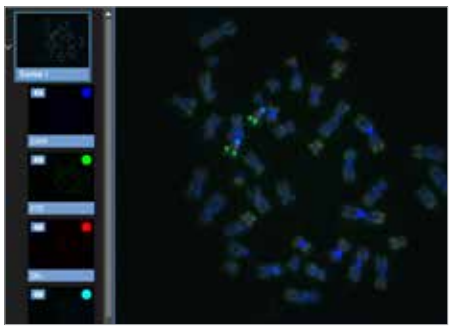
— Ability to work with various sets of fluorescent dyes

— Acquisition of a composite image from multiple images

— Saving of camera settings for each probe (fluorescent dye)

— Correction of optical image shift occurring when switching light filters on the microscope

Features of Vision KaryoFISH



Filter sets

Selection of the set of fluorescent dyes used to stain the specimens



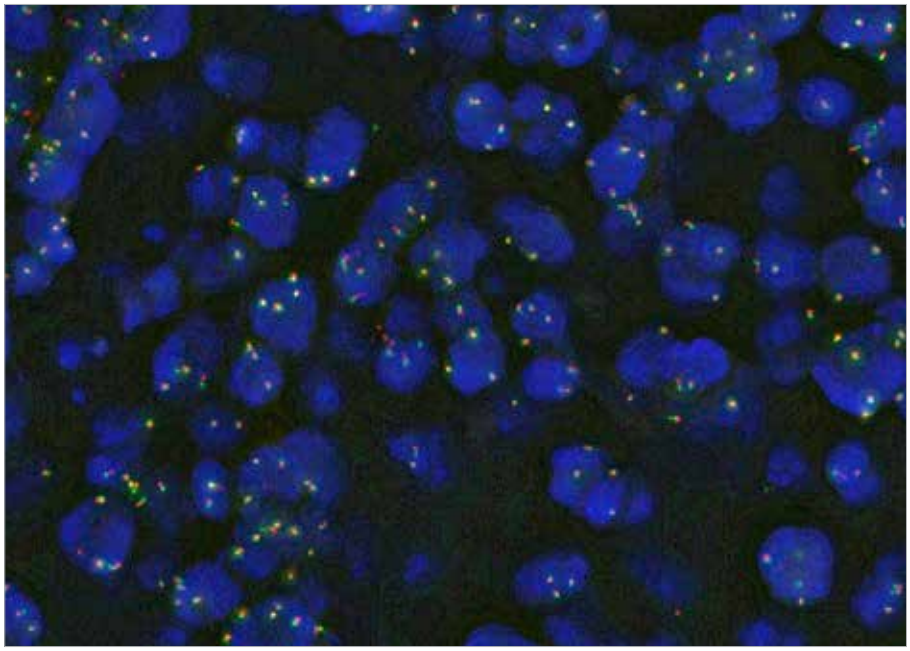
Filter configuration

Changing the name, wavelength, and coding color of the dye



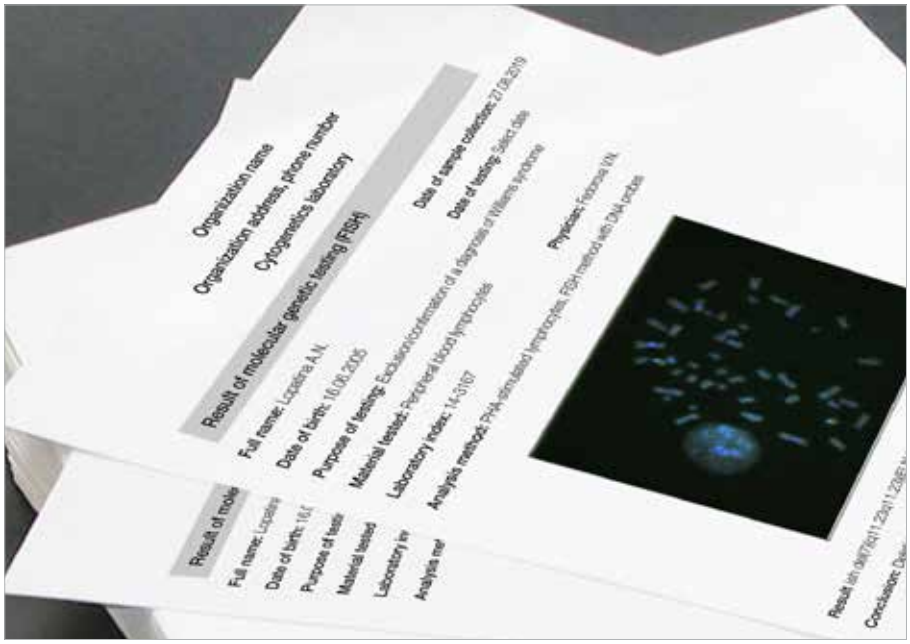
Image enhancement

Improving image quality through brightness, contrast, gamma, and sharpness adjustment



Composite image

Automatic acquisition of a composite color-coded image from monochrome images obtained with different light filters

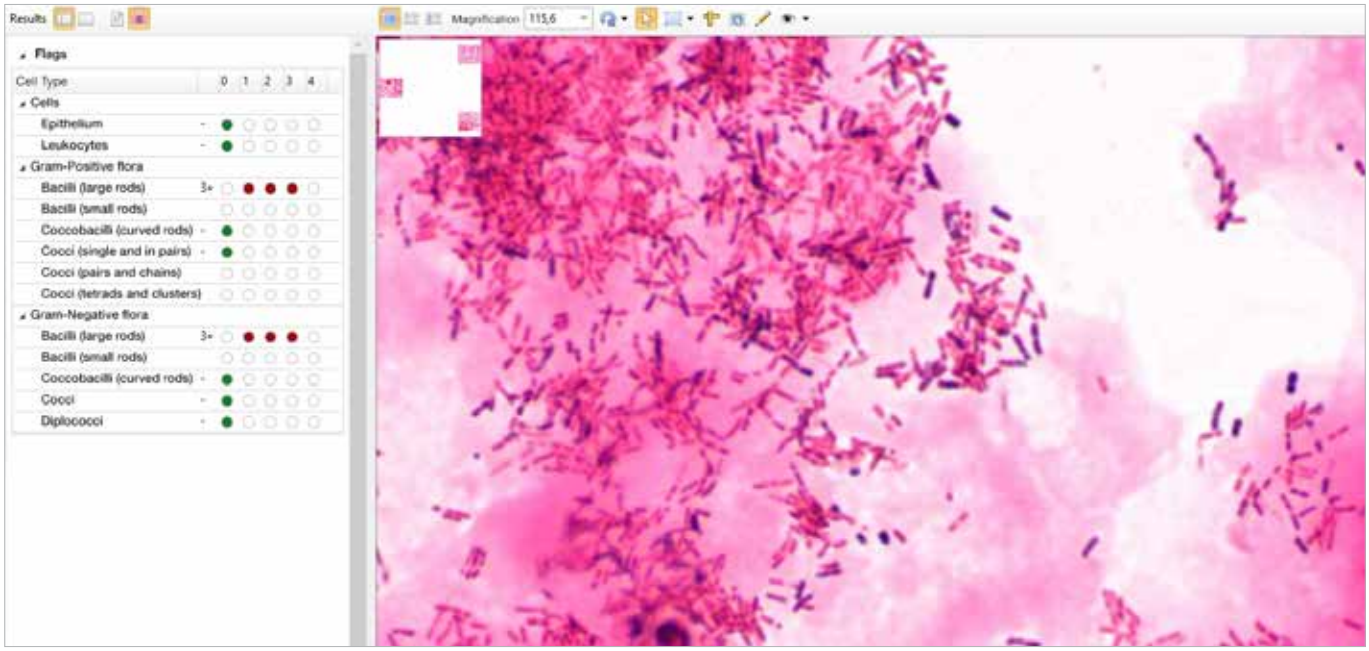


Report generation

Saving and printing analysis results

Vision Microbiology

Automated Gram stain analysis



Analysis and automatic identification

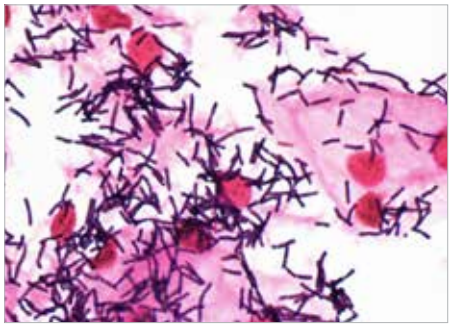
— Epithelial cells and leukocytes

— Gram-positive flora: bacilli, coccobacilli, cocci, diplococci

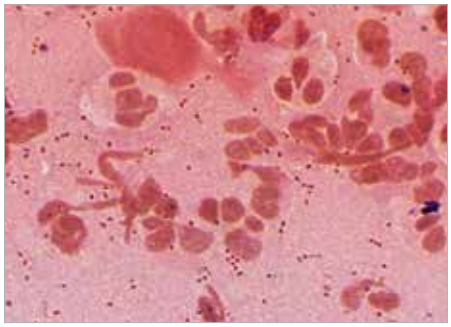
— Gram-negative flora: bacilli, coccobacilli, cocci, diplococci

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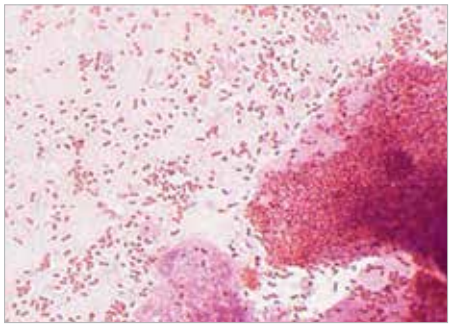
Examples of Gram-positive and Gram-negative flora



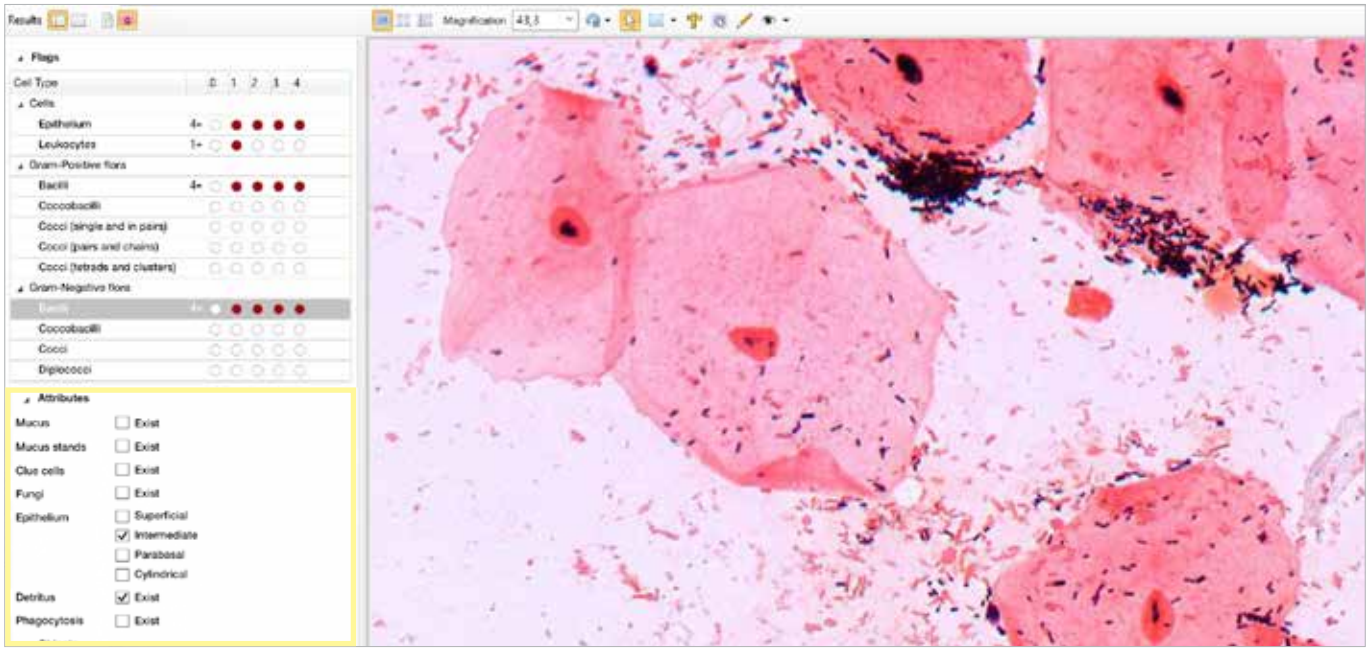
Bacilli



Cocci



Coccobacilli



Additional evaluation

— Mucus

— Mucus strands

— Clue cells

— Trichomonas vaginalis

— Spores and mycelium

— Erythrocytes

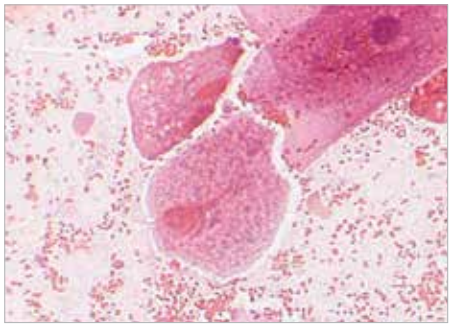
— Epithelium (superficial, intermediate, parabasal, columnar)

— Leukocyte count per field of view at ×100

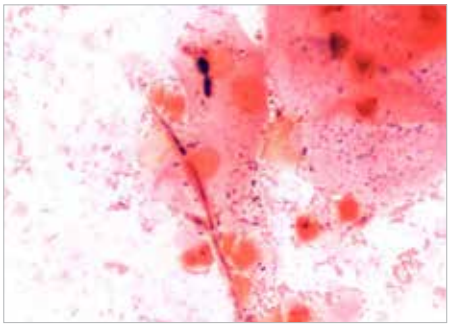
— Detritus

— Phagocytosis

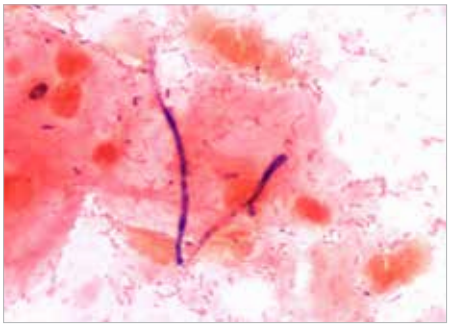
Examples of additional objects assessed



Trichomonas vaginalis



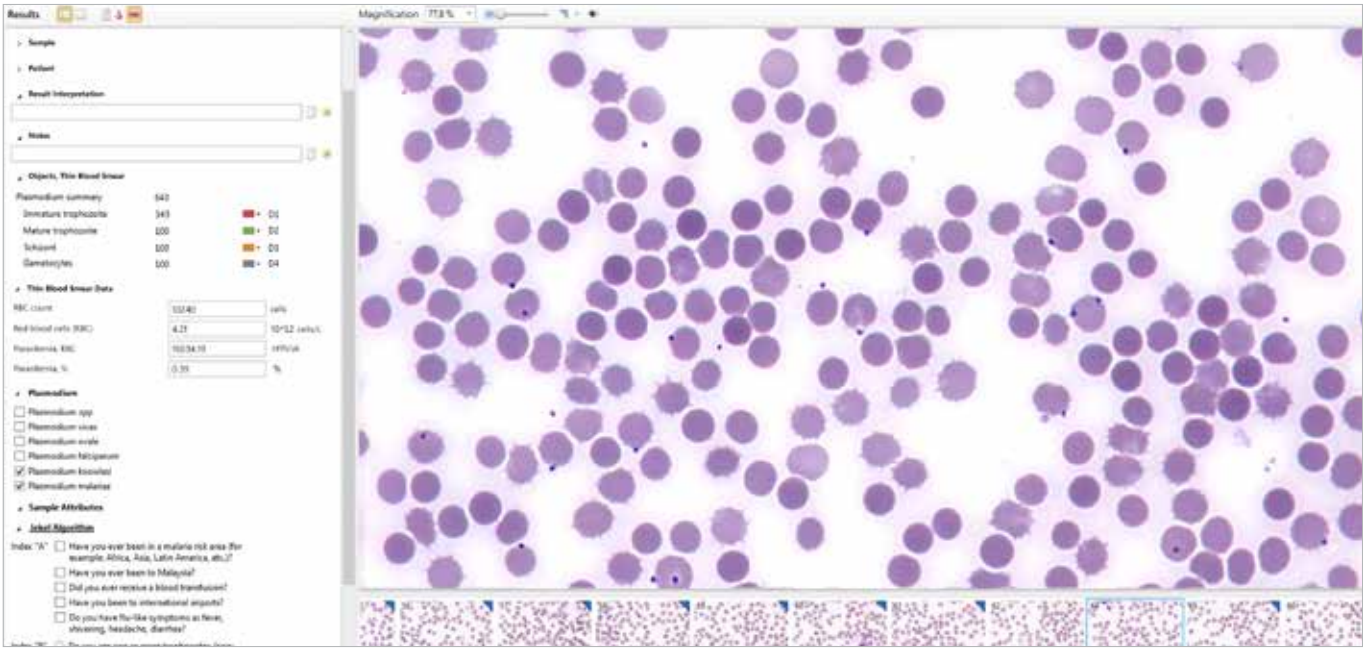
Spores and mycelium



Mycelium

Vision Microbiology

Automated analysis for hemoparasites



Key features

— Automated scanning of thick blood smears (up to two thick blood drops)

— Quantification of Plasmodium parasites per 1 µL of blood relative to the leukocyte count

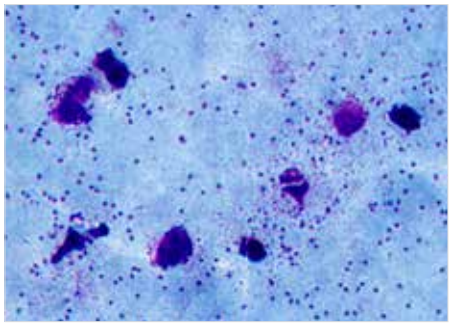
— Automated scanning of thin blood smears

— Identification of Plasmodium species

— Quantification of Plasmodium parasites per 1 µL of blood relative to the erythrocyte count

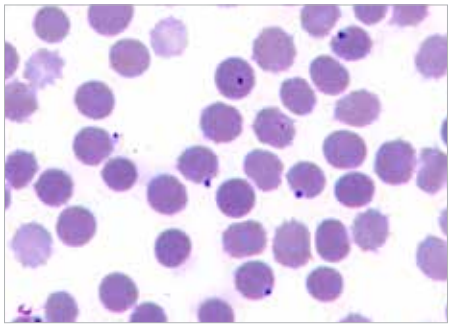
— Calculation of parasitemia percentage

Plasmodium species identification



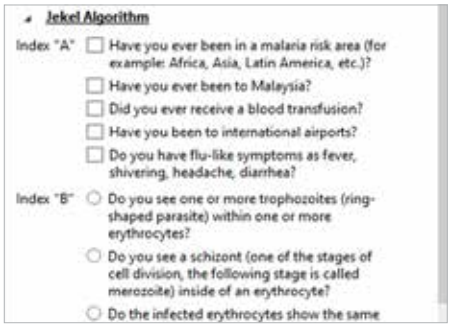
Thick smear image

Automated scanning of thick blood smears for Plasmodium detection



Thin smear image

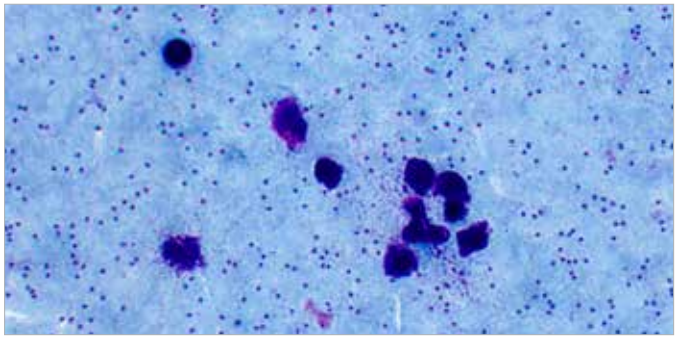
Automated scanning of thin blood smears with erythrocyte counting for Plasmodium species identification

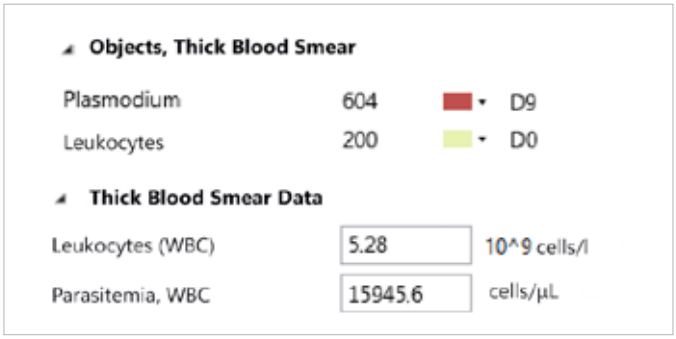


Species identification algorithm

A standardized method for Plasmodium species identification

Hemoparasite analysis according to WHO recommendations



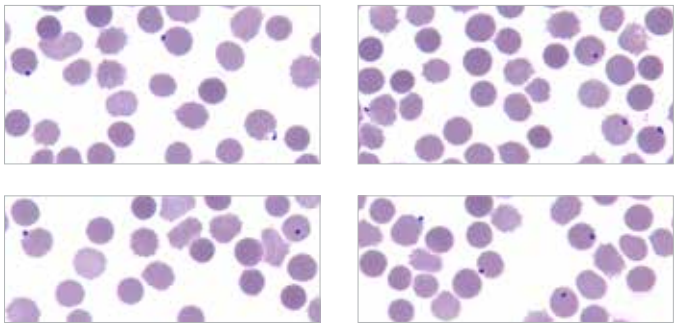


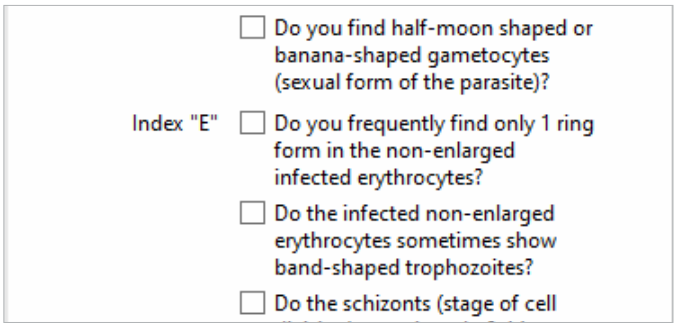
1 **Thick smear scanning for Plasmodium detection**

Automated scanning of thick blood smear

2 **Plasmodium detection**

Detection of Plasmodium presence. Counting the number of Plasmodium parasites per 100 leukocytes and per 1 µL of blood



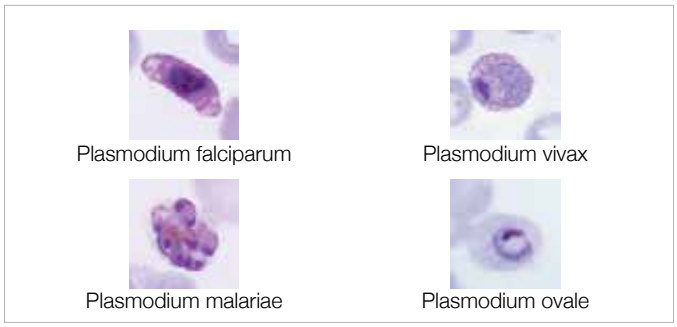


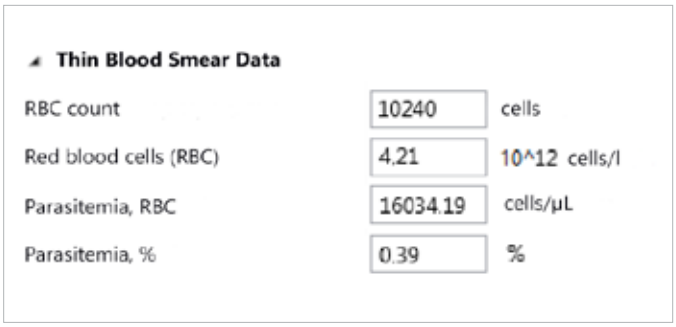
3 **Thin smear scanning for Plasmodium species identification**

Automated scanning of thin blood smear after Plasmodium detection with erythrocyte counting

4 **Plasmodium species identification algorithm**

The algorithm provides a standardized method for Plasmodium species identification





5 **Plasmodium species determination**

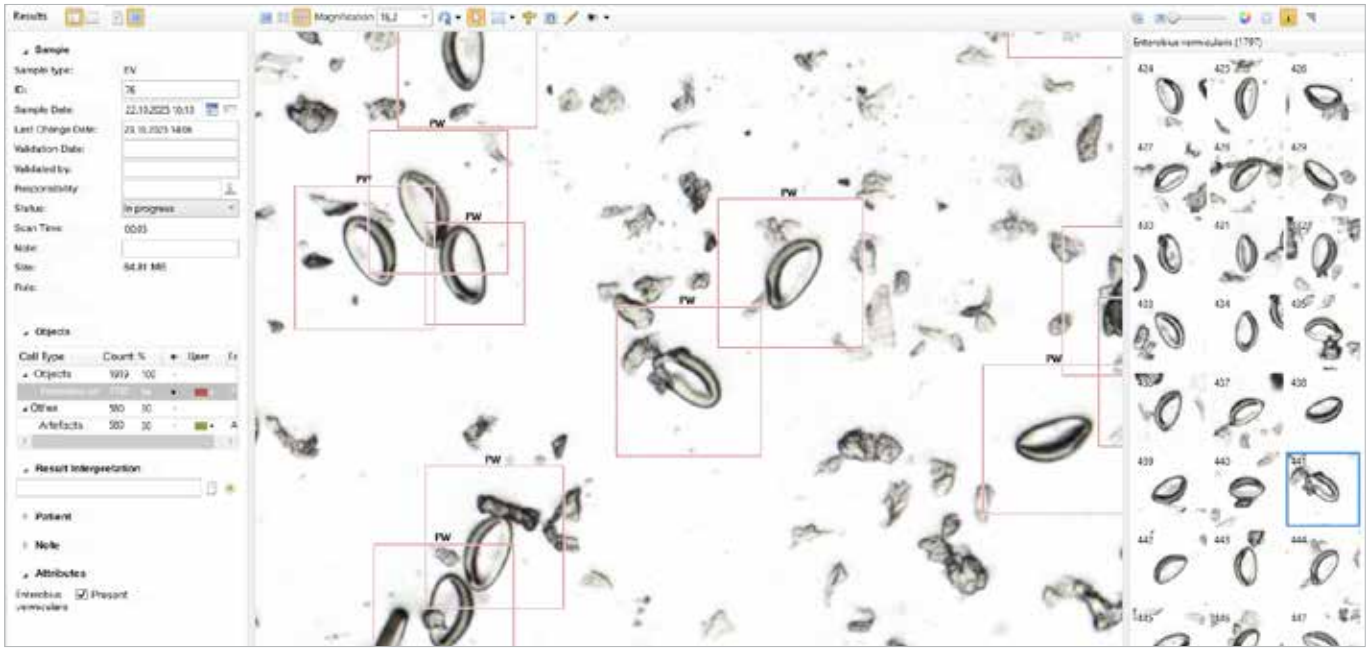
The Plasmodium species is identified based on the collected erythrocyte images

6 **Parasitemia calculation**

Determination of the percentage of infected erythrocytes containing malaria parasites. Calculation of the number of Plasmodium parasites per 1 µL of blood relative to the erythrocyte count

Vision Copro

Automation of enterobiasis diagnostics



Key features

— Automatic scanning of the entire slide

— Less than 1 minute per sample

— Automatic detection of pinworm eggs

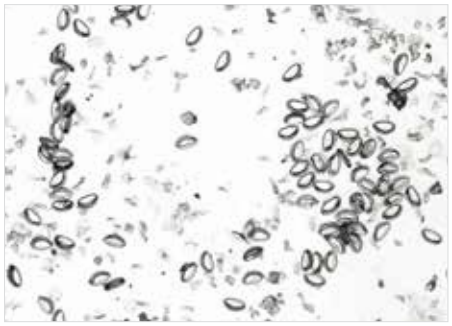
— Digital copy of the slide

— Standardization and quality control

— Contamination control

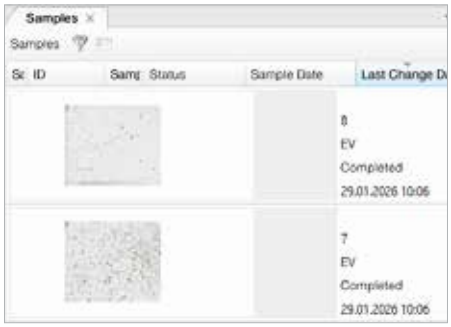
— Reduced staff workload

Digital technologies for pinworm testing



Digital slide

Digital representation of samples for analysis, storage, and remote review



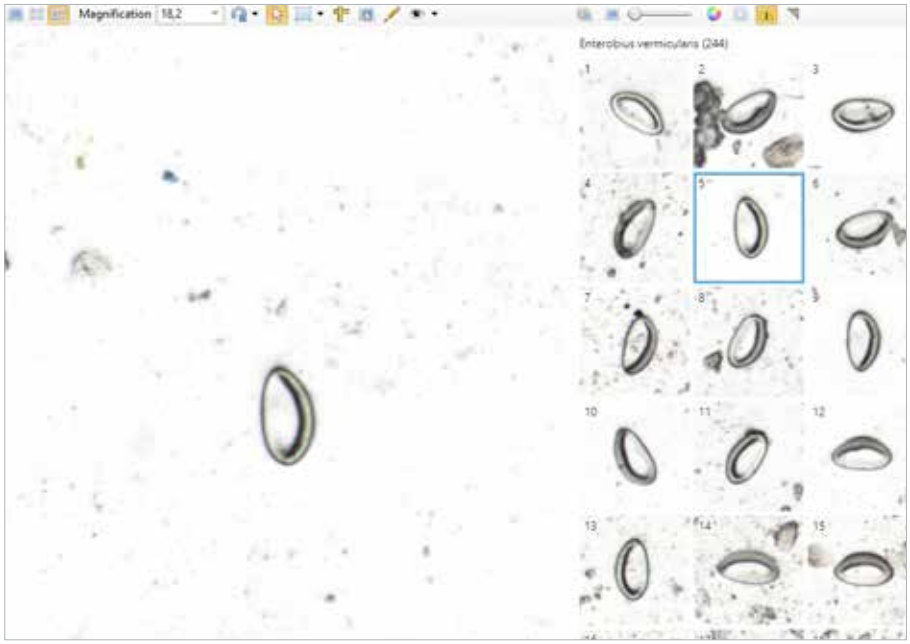
Storage

Database for digital slide storage and management



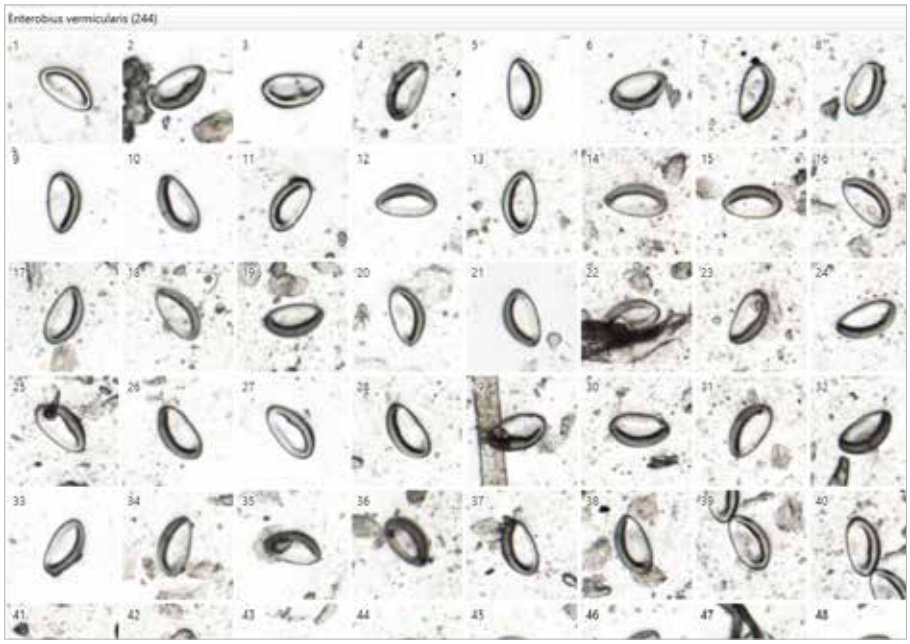
Quality control

Quality control and assessment of diagnostic sensitivity and specificity



Multi-view

Simultaneous operation in two modes: “objects in the field of view” and “gallery of Enterobius vermicularis objects”

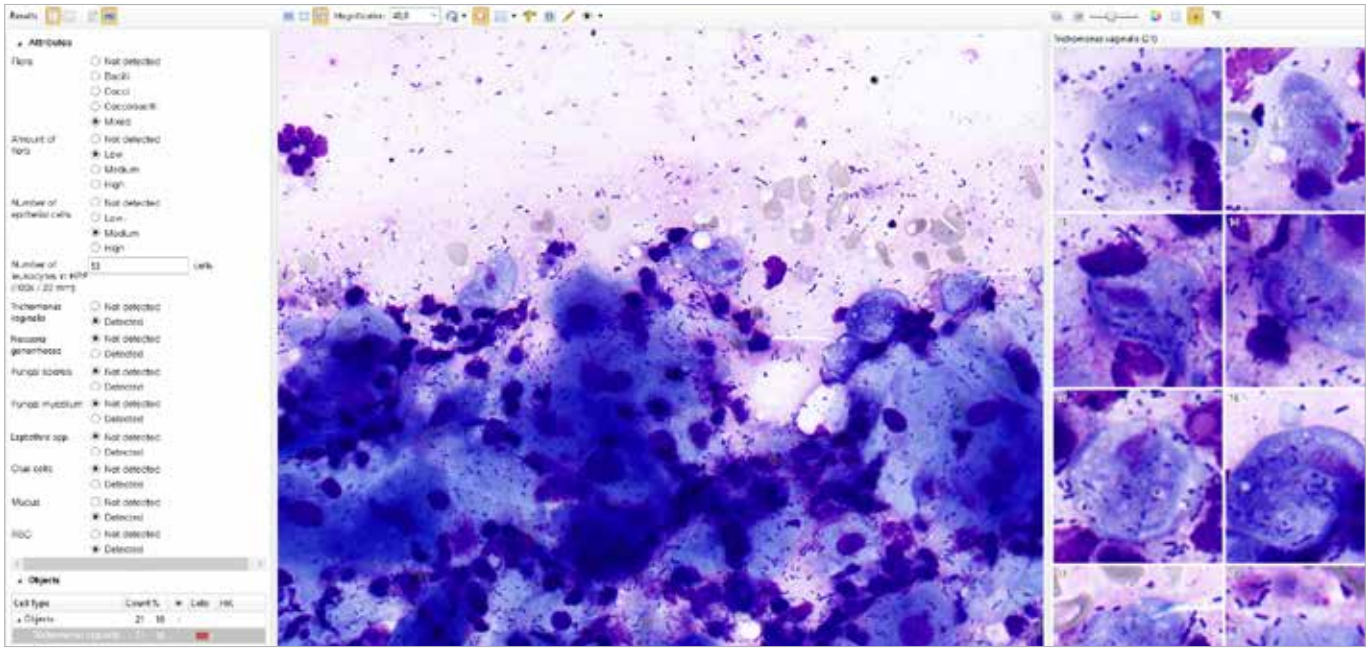


Pinworm egg gallery

Display of identified Enterobius vermicularis eggs as an image gallery

Vision Uri

Automated sexually transmitted infections (STIs) diagnostics

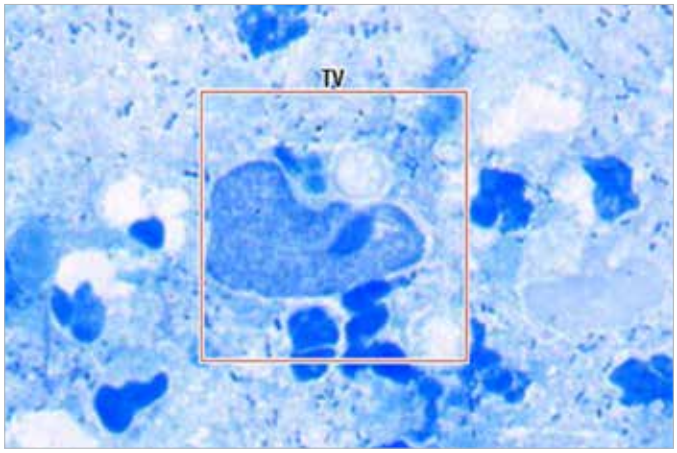


Pre-classification parameters and objects

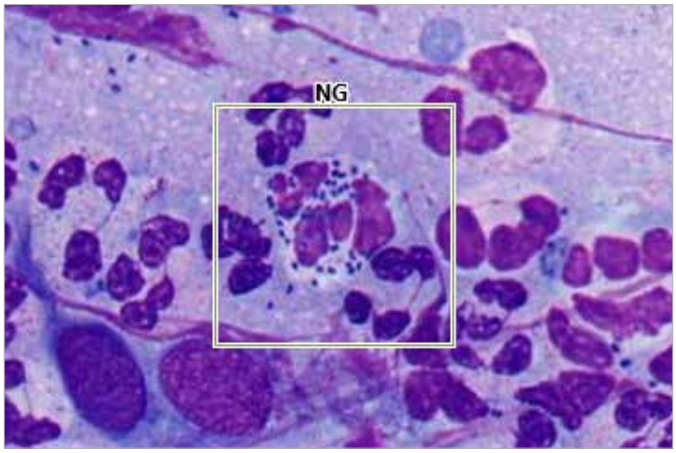
— Up to 3 smears/sites (Cervical, Urethral, Vaginal) per slide
— Type and amount of flora
— Epithelium
— Leukocytes
— Trichomonas vaginalis
— Neisseria gonorrhoeae
— Fungal spores
— Fungal mycelium
— Leptothrix spp.
— Clue cells

Types of microscopic examinations

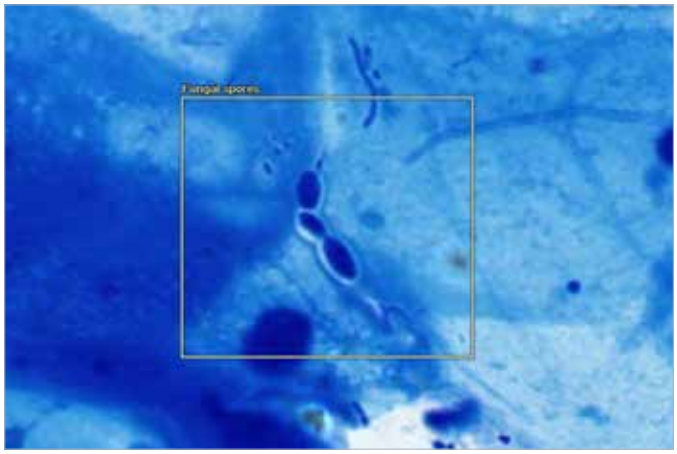
— **Microbiome**
— **Vaginal cleanliness grade**
— **Vaginal smear**
— **Microscopic examination (Cervical, Urethral, Vaginal)**
— **Microscopy for STI pathogens**
— **Microscopy for N. gonorrhoeae**



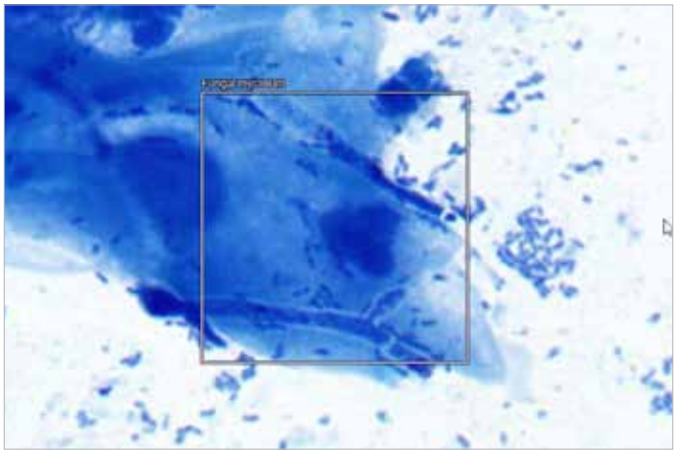
Trichomonas vaginalis



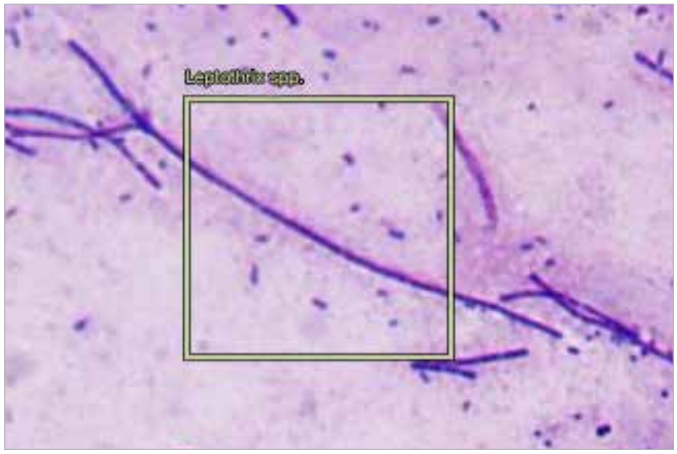
Neisseria gonorrhoeae



Fungal spores



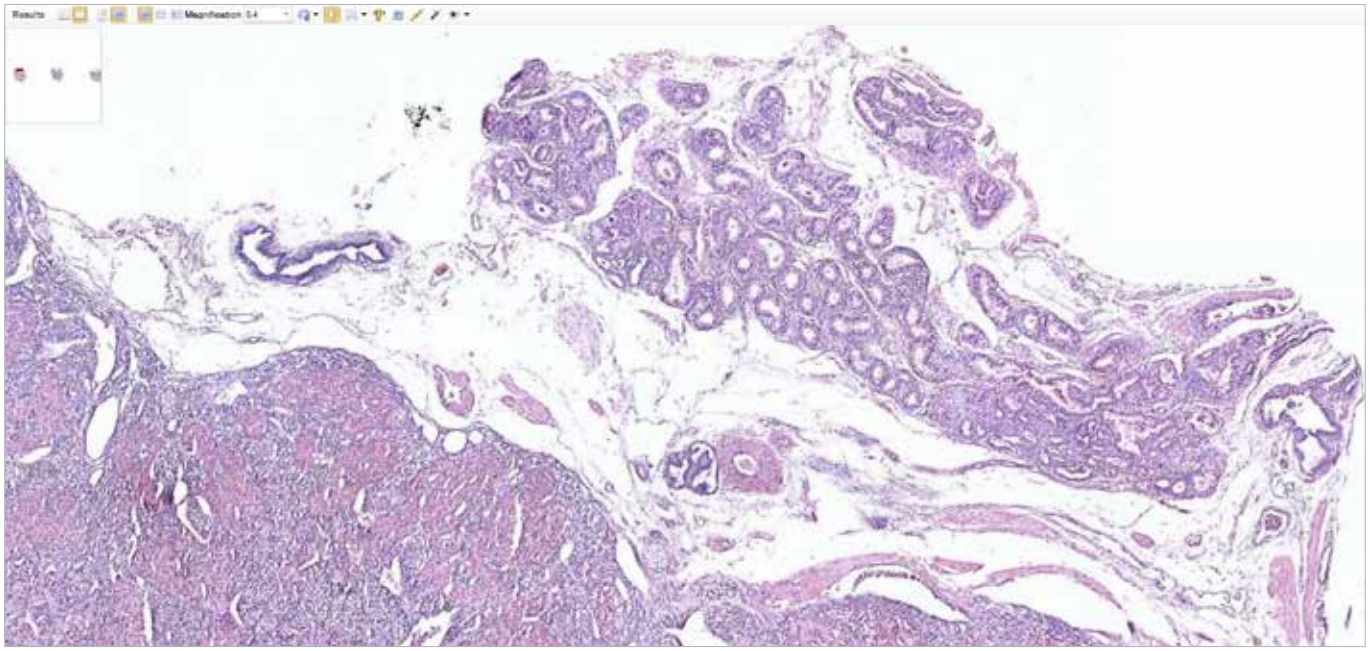
Fungal mycelium



Leptothrix spp.

Vision Slide

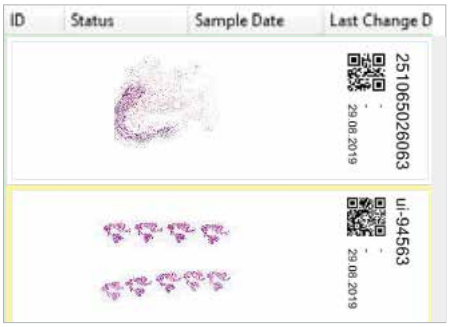
Histological, cytological, clinical, and scientific research



Convenient work with digital slides

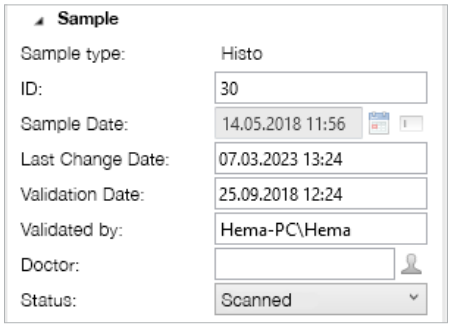
Vision Slide provides quick access to high-resolution digital slides that can be viewed and annotated: rotate, highlight and zoom, compare and comment on areas of interest, analyze images, and more.

Features of Vision Slide



Storage

Database for storing digital slides



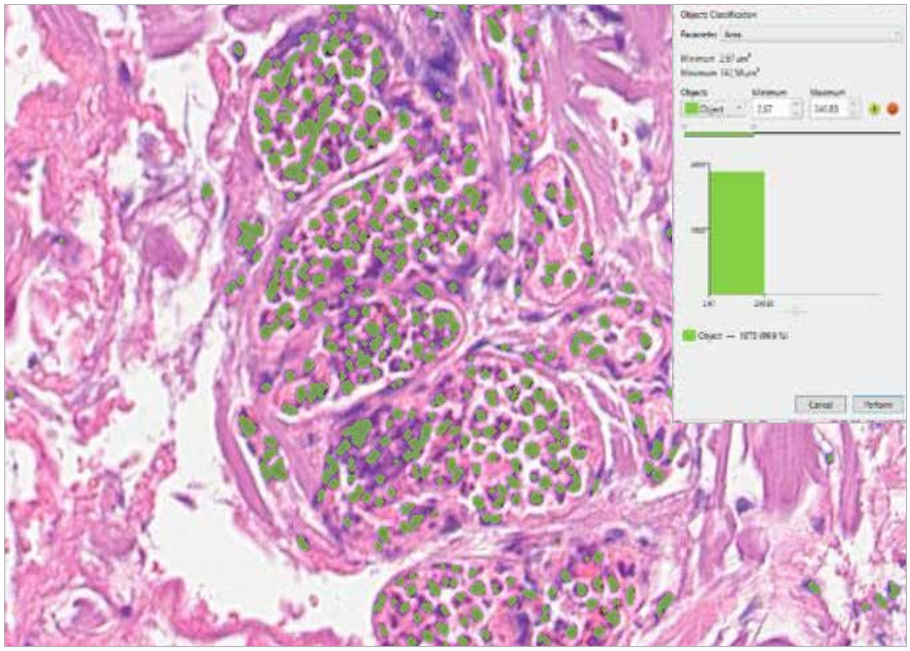
Sample information

Customizable electronic form



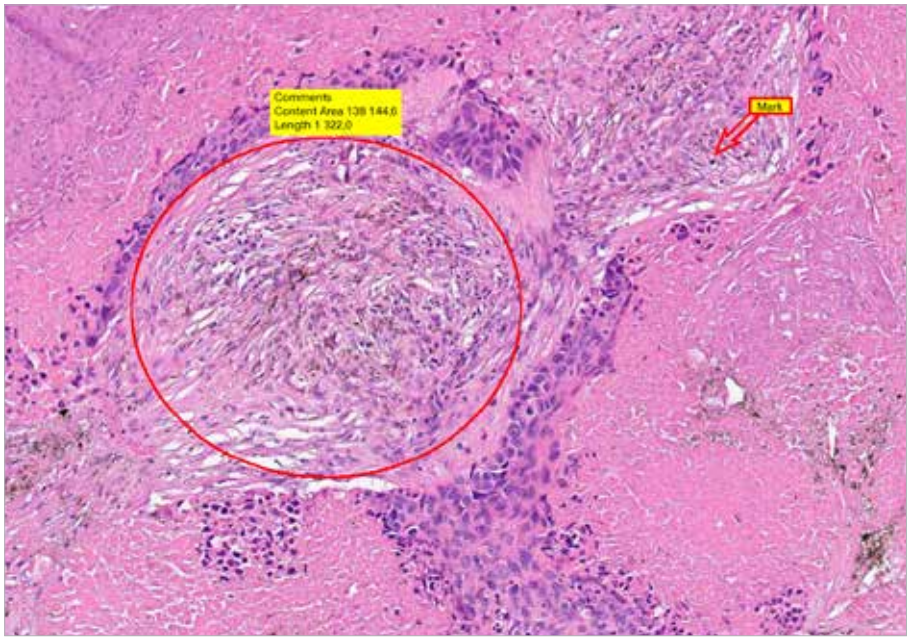
Report

Report generation



Object analysis.
Classification and count

Color selection of objects
for analysis. Search and classification
of the objects of analysis according
to the necessary criteria. Automatic
or manual object identification
on the digital slide.
Measurements of linear and optical
parameters for particles

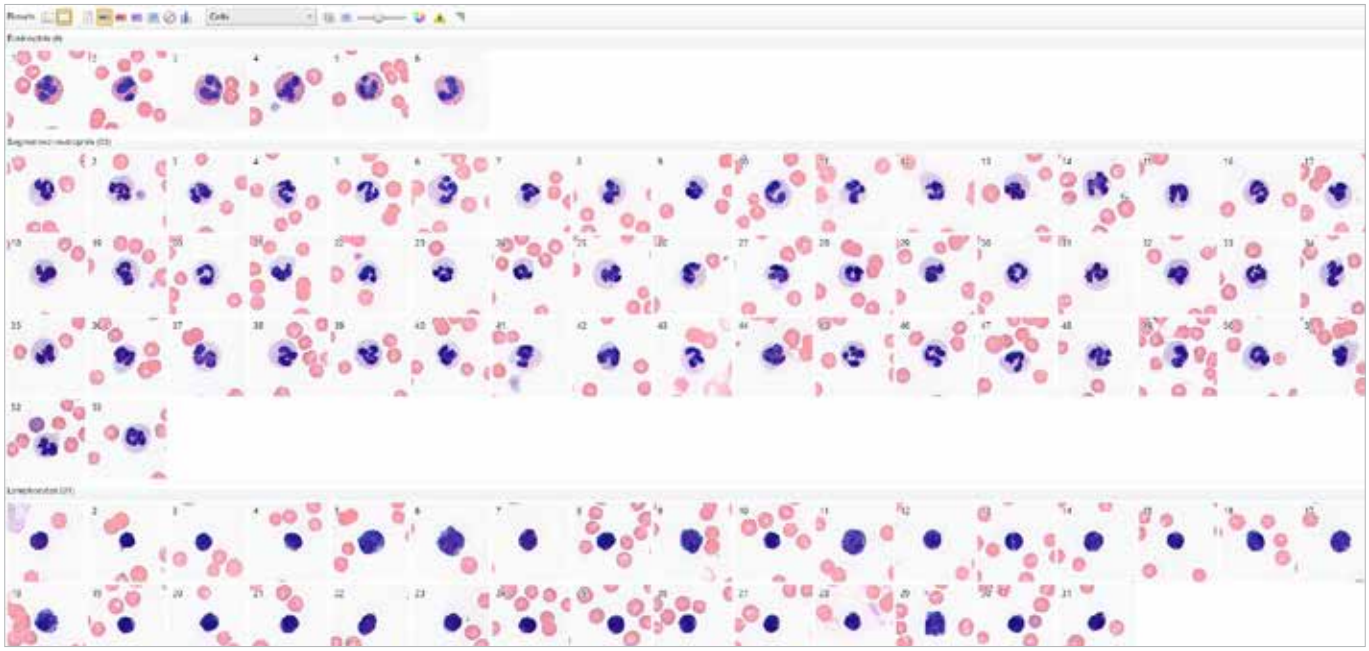


Comments and marks

Add comments and marks
on a digital slide

Vision Hema Vet

Automated analysis of animal blood smears



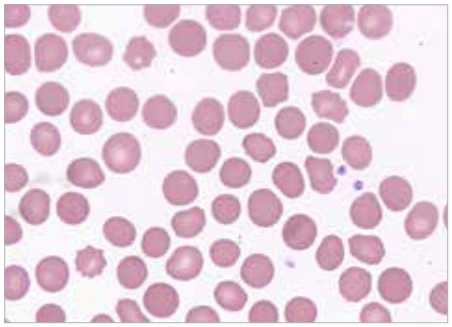
Leukocyte analysis

- Basophils
- Eosinophils
- Promyelocytes
- Myelocytes
- Metamyelocytes
- Band neutrophils
- Segmented neutrophils
- Lymphocytes
- Monocytes
- Reactive lymphocytes
- Blasts
- Erythroblasts

Classifier of leukocytes for different species of animals

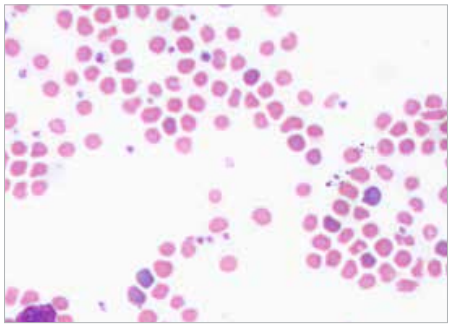
- Birds (calculation of leukocyte concentrations)
- Cats and dogs
- Cattle and small ruminants
- Horses and other animals

Analysis of erythrocytes and platelets



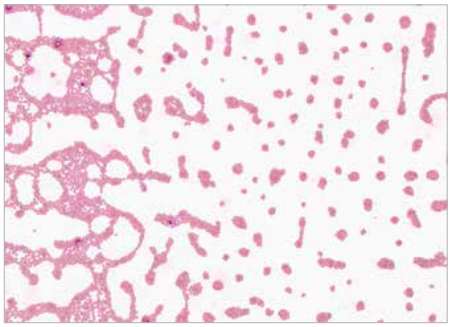
Analysis of erythrocytes

Size, color, shape, inclusions



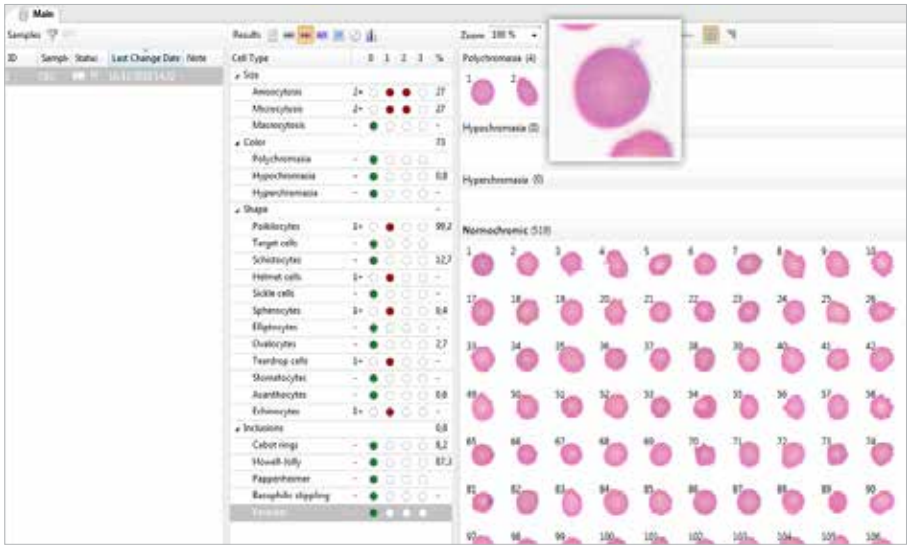
Analysis of platelets

Normal, micro, macro, giant



Feathered edge scanning

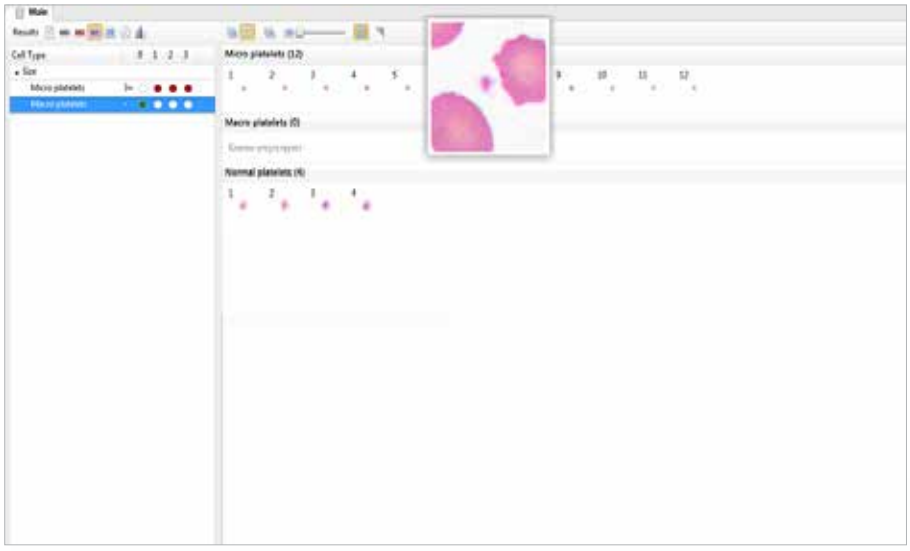
Assessment of platelet aggregation (clumping) and smear preparation quality



Extended analysis of erythrocytes

Display of identified erythrocytes in a gallery view.

Automatic analysis of erythrocytes by size, color, shape and inclusions



Extended analysis of platelets

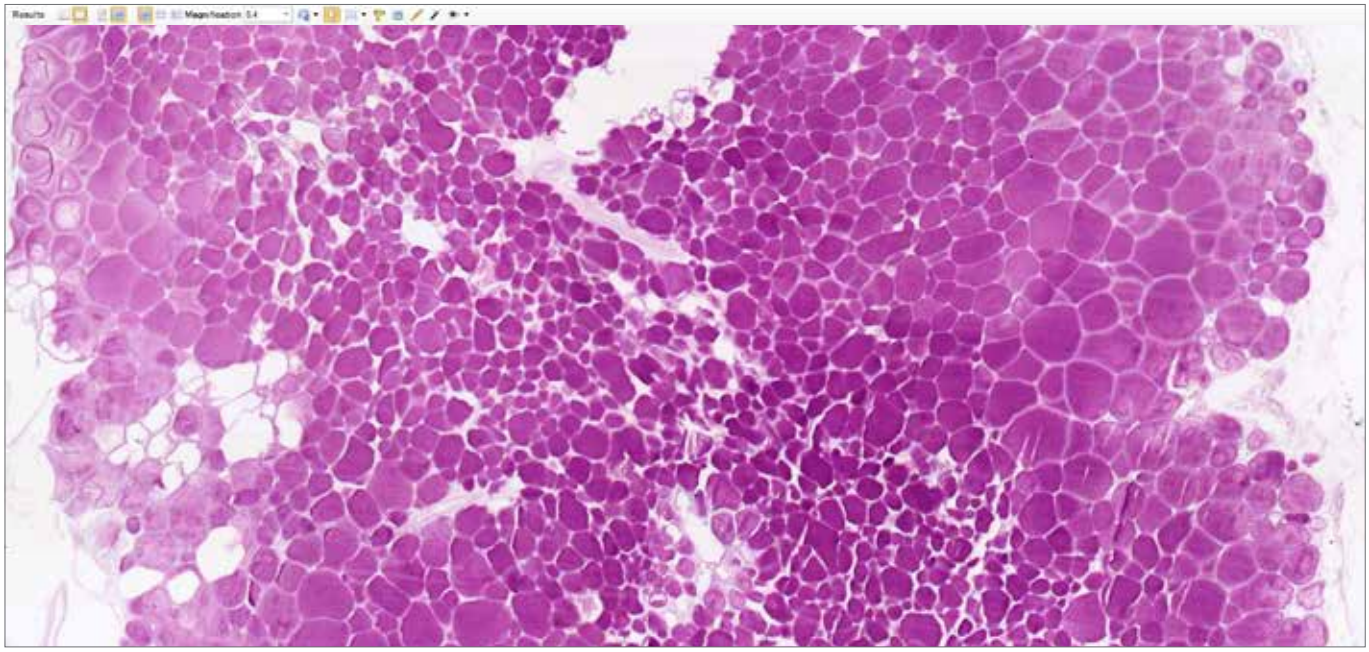
Display of identified platelets in a gallery view.

Automatic analysis of platelets
in 4 categories: micro, macro, giant, normal



Vision Slide Vet

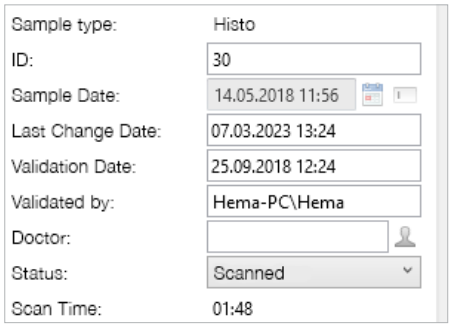
Digital cytology and histopathology



Convenient work with digital slides

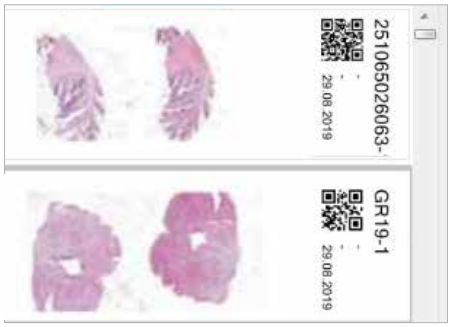
Vision Slide Vet provides quick access to high-resolution digital slides for histopathology and cytology in veterinary medicine. Specialists can easily rotate, highlight areas of interest and zoom in and out, which greatly simplifies the analysis and diagnosis process.

Features of Vision Slide Vet



Sample information

Customizable electronic form



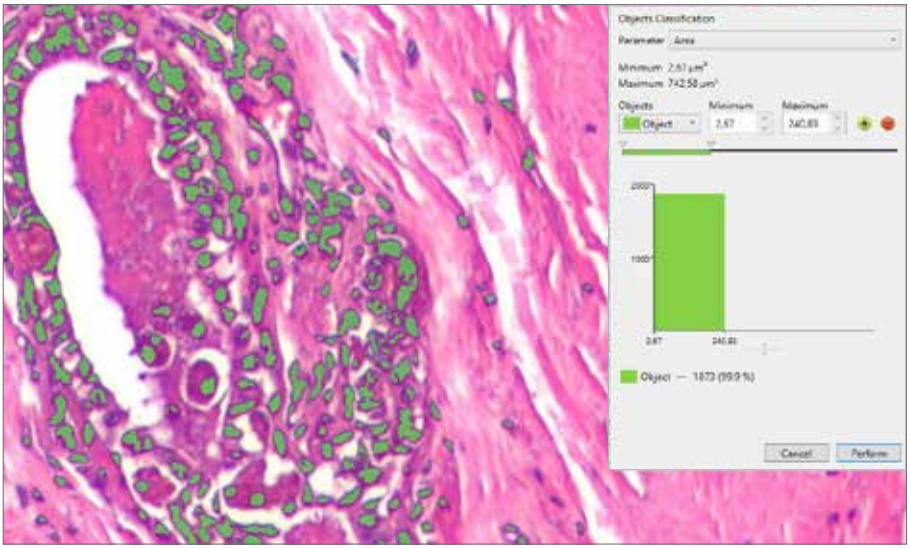
Storage

Database for storing digital slides



Report

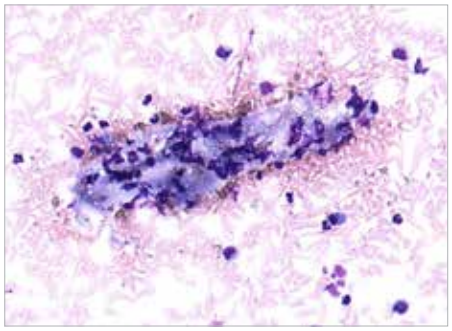
Preparation of reporting documents



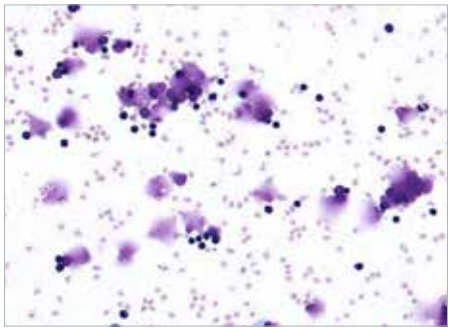
Identification and classification of objects

Color selection of objects for analysis. Search and classification of the objects of analysis according to the necessary criteria. Measurements of linear and optical parameters for particles

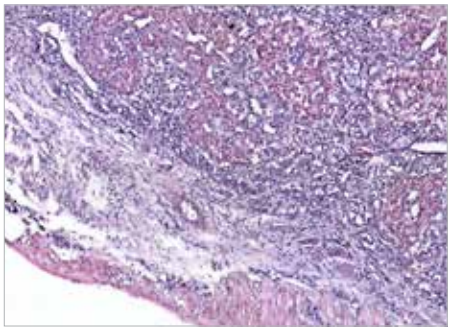
Digital animal slides



Dog effusion fluid



Cow effusion fluid



Cat adrenal gland



Vision Karyo Vet

Animal and plant chromosome karyotyping



Key features

— Interactive recognition and karyotyping of animal and plant chromosomes

— Automatic separation of overlapping and touching chromosomes

— Creation of custom idiogram databases

— Comparison of chromosomes and/or idiograms

— Comparison of homologous chromosomes from different metaphase plates

— Merging multiple fields of view into a single image

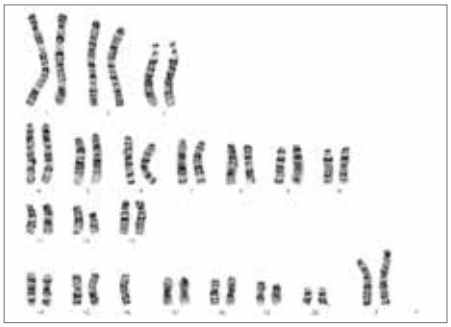
— Annotation with graphics and comments, with selection from a user-defined list

Features of Vision Karyo Vet



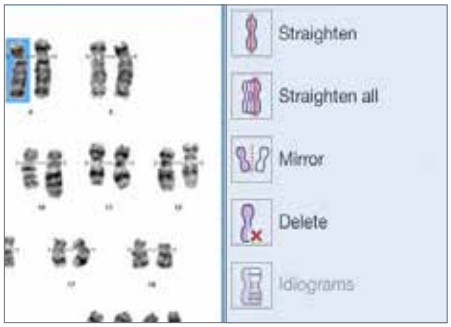
Karyogram templates

Editing the karyogram template for the selected genome



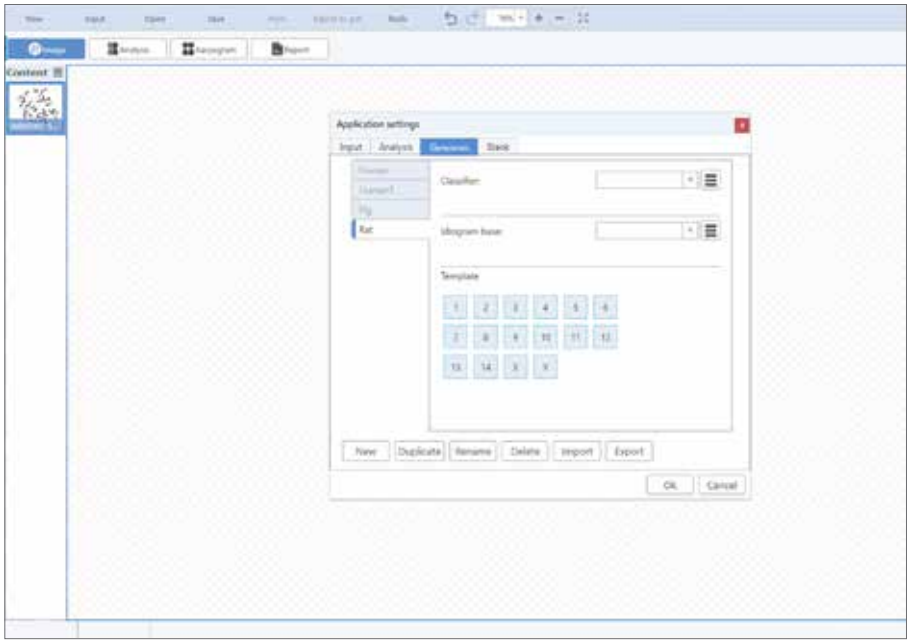
Karyogram

Animal and plant karyogram construction, editing



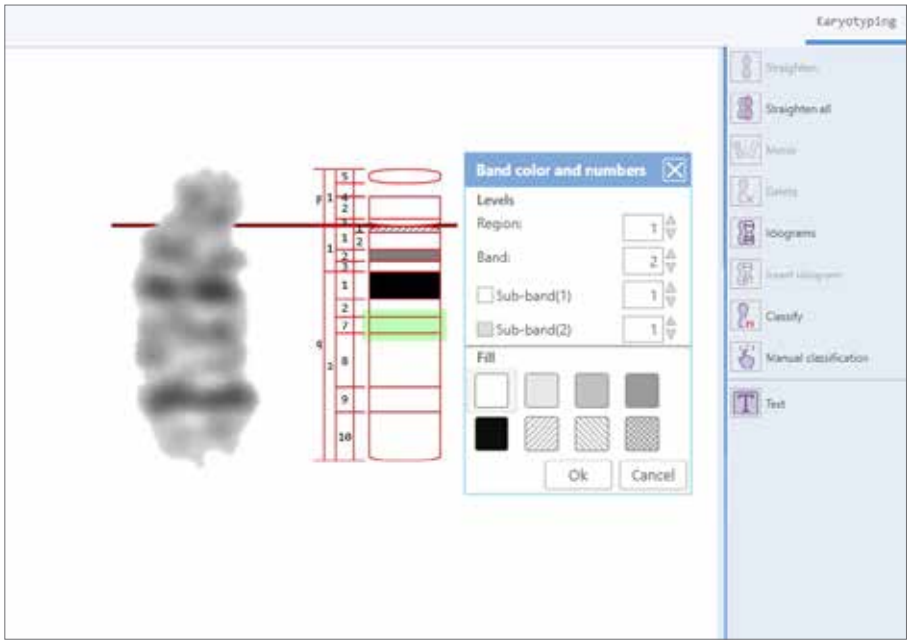
Editing

Repositioning, rotation, and straightening of chromosome images



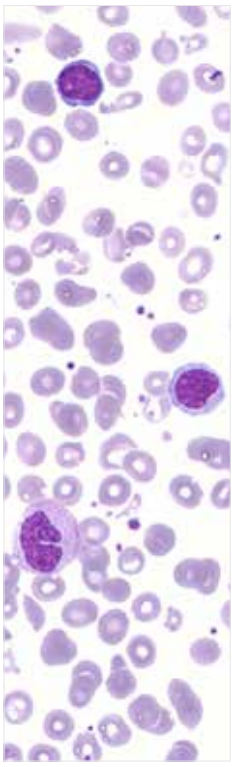
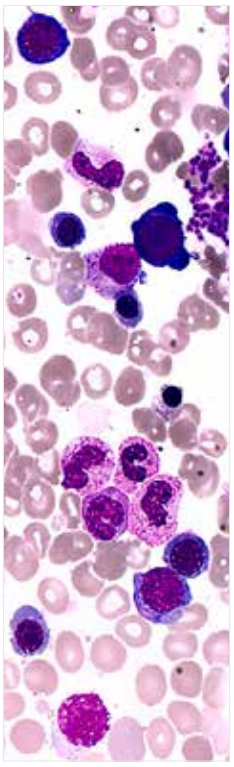
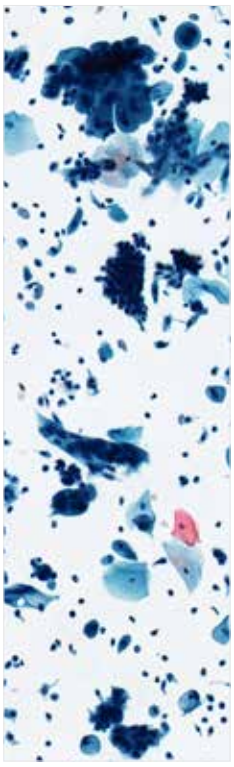
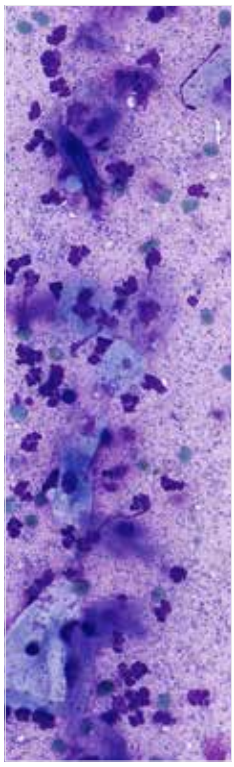
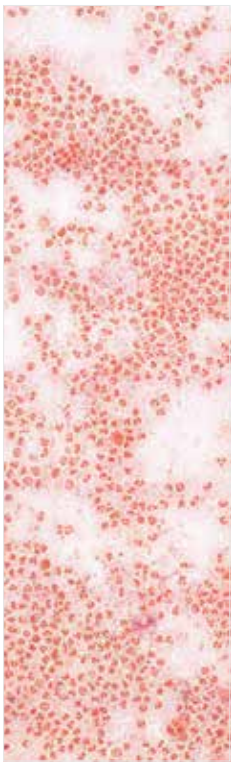
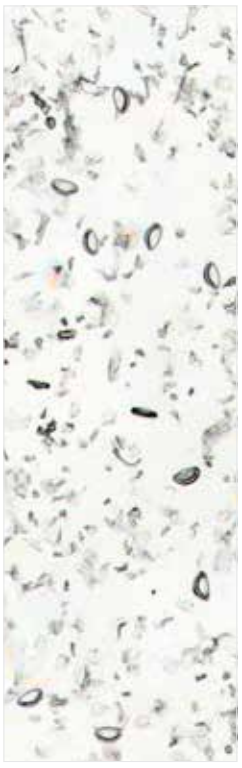
Classifiers

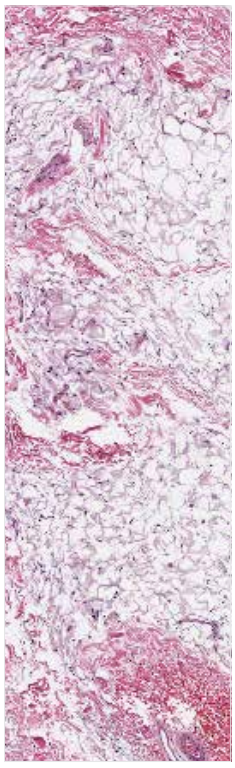
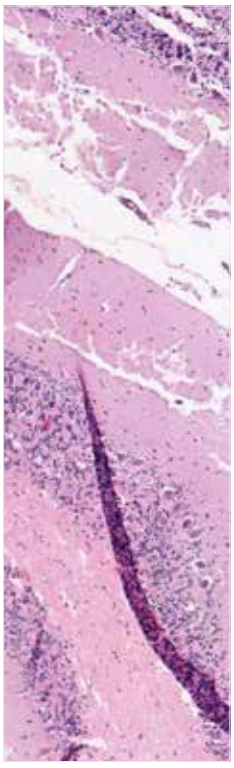
Create a new classifier for the selected genome. Each genome can have its own set of classifiers—for example, for different staining patterns.



Idiogram editor

Idiogram sets not included in the installation can be created and added to the system by the user. The editor allows you to define bands, their placement and order, as well as their properties.



MICROOPTIX SOLUTION CONFIGURATIONS

Choose your system

	MX 500 1 slide	MX 600 1 slide	BX43 1 slide	Axio Imager 1 slide
Hematology				
Vision Morpho — morphology of human blood cells and fluids	✓	—	✓	✓
Bone marrow				
Vision Hema — automated bone marrow cell analysis	—	—	—	—
Cervical cytology				
Vision Cyto — automated cervical screening; evaluation of immunocytochemical reaction	—	—	—	—
Sperm analysis				
Vision Sperm — automated computer-assisted sperm analysis (CASA)	✓	✓	✓	✓
Cytogenetics				
Vision Karyo — automated chromosome karyotyping; metaphase plate analysis	✓	—	—	—
Vision KaryoFISH — FISH analysis and chromosome karyotyping	—	✓	✓	✓
Microbiology				
Vision Microbiology — automated Gram stain analysis; analysis for hemoparasites	—	—	—	—
Enterobiasis				
Vision Copro — automation of enterobiasis diagnostics	—	—	—	—
Sexually transmitted infections (STIs)				
Vision Uri — automated sexually transmitted infections (STIs) diagnostics	—	—	—	—
Histology and cytology				
Vision Slide — histological, cytological, clinical, and scientific research	✓	—	✓	✓
Veterinary medicine				
Vision Hema Vet — automated analysis of animal blood smears	✓	—	✓	✓
Vision Slide Vet — digital cytology and histopathology	✓	—	✓	✓
Vision Karyo Vet — animal and plant chromosome karyotyping	✓	—	✓	✓

	MX 500 (M) 1 or 4 slides	MX 600 (M) 1 or 4 slides	BX43F up to 8 slides	Axio Imager up to 120 slides
Hematology				
Vision Morpho	✓	—	✓	✓
Bone marrow				
Vision Hema	✓	—	✓	✓
Cervical cytology				
Vision Cyto	✓	—	✓	✓
Sperm analysis				
Vision Sperm	✓	✓	✓	—
Cytogenetics				
Vision Karyo	✓	✓	✓	✓
Vision KaryoFISH	—	—	—	—
Microbiology				
Vision Microbiology	✓	—	✓	✓
Enterobiasis				
Vision Copro	—	—	✓	—
Sexually transmitted infections (STIs)				
Vision Uri	✓	—	✓	✓
Histology and cytology				
Vision Slide	✓	—	✓	✓
Veterinary medicine				
Vision Hema Vet	✓	—	✓	✓
Vision Slide Vet	✓	—	✓	✓
Vision Karyo Vet	✓	—	✓	✓

FOR NOTES

MICROOPTIX

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