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a PerkinElmer company

Medizinische
Labordiagnostika
AG

EUROPattern

Computer-aided immunofluorescence microscopy (CAIFM)

- Fully automated microscopy and modern diagnostics at the computer screen (cell substrates, tissues and EUROPLUS antigen dots, also in mosaics)
- Pattern recognition for ANA and ANCA, including mixed patterns and titers
- Classification of results as positive or negative for Crithidia luciliae, antigen-expressing cells and EUROPLUS antigen dots
- Fast processing (13 seconds / image) and consolidation of results per patient for paperless diagnostics
- Digital archiving of fluorescence images and reports
- Bidirectional data exchange with the laboratory information system (LIS)

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Modern technology from the experts

Magazine for 500 fields (A)

Automated slide supply

DataMatrix code reader

Controlled (c)LED for >50,000 h constant light intensity (B)

High-resolution cameras

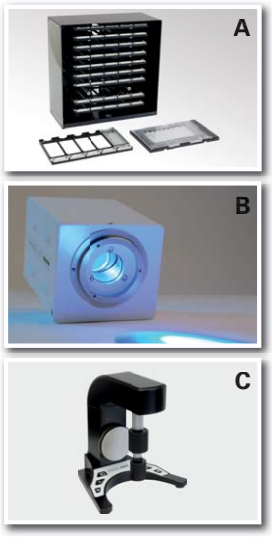
Precise optical system

Up to 3 different autofocus objectives

3D manual control

RealDrive manual control (C) (optional)

Oculars (optional)



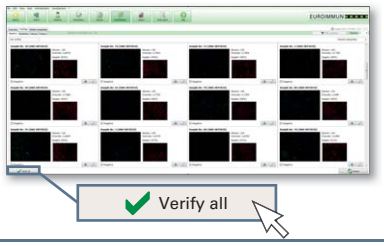
Paperless generation of result reports in three steps

User-friendly software

1

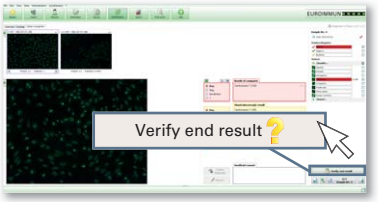
After the initiation, the microscope automatically takes subsequent fluorescence images of all slides. The fluorescence images can be viewed immediately and checked at the screen, while the microscope continues recording the images.

2



Negative samples are displayed in a clear scroll-down list and can be verified rapidly and reliably all together, taking into account the counterstaining, with a single mouse click. For strongly positive samples the software also suggests individual dilution series for subsequent analyses.

3



Positive and borderline samples are afterwards displayed for each patient, and all individual results are compiled in an overview. The user can directly confirm the suggested patterns and titers by mouse click, or, if necessary, edit them – the competence remains with the user.

The entire process can be performed completely paperlessly, from the creation of worklists, to diagnostics and archiving of fluorescence images and results. Results from former analyses are shown in a clear patient history.

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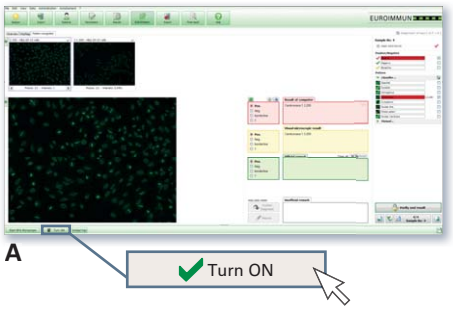
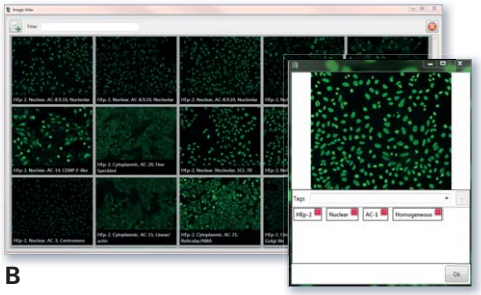
More practice-oriented functionalities

- The intelligent management of all data and results as well as the bi-directional communication with the LIS and the instruments takes place with the laboratory management software EUROLabOffice.
- Very quick focussing, image recording and digital evaluation (13 seconds/image) allow for the system to be integrated into the workflows of the largest laboratories. Diagnosis suggestions can be already verified during the automated microscopy process.
- Via mouse click **(A)**, the sample field can be automatically approached and manually microscopied in the live mode. In order to prevent fading of the fluorescence, the cLED turns itself off when inactive.
- Automated photographing of tissues for subsequent visual diagnostics at the screen and archiving is also possible.
- By using the EUROLabOffice Image Atlas **(B)**, recorded fluorescence images can be annotated and saved as a reference or for study purposes by one mouse click.

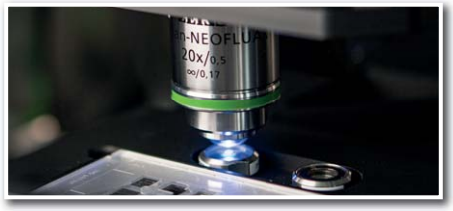


A


B

Fluorescence standardisation

- Constant illumination due to the built-in fluorescence standard
- Unique automated calibration of the microscope



Excellent agreement between CAIFM and conventional evaluation

- Allocation of the samples to the corresponding results is ensured through the DataMatrix codes of the slides. The slides can be loaded in any order.
- Focussing in transmitted light prevents the fluorescence from fading.
- The counterstaining enables a reliable quality control of all fluorescence images during diagnostics.
- The controlled EUROIMMUN cLED guarantees standardised excitation light and reproducible fluorescence emissions.
- The integrated fluorescence standard calibrates all EUROPattern microscopes for comparable IIFT images.
- The computer-aided evaluation can be adjusted to the local diagnostic standards with respect to the patterns (e.g. sensitivity).
- Reliable support, both technical and scientific, is ensured. In the case of unclear findings, the user can automatically provide the EUROIMMUN support team with all required data in anonymised form for quick and targeted support.

ANA pattern		Identified pattern (automatic pattern recognition)	
	n	n	%
Homogen.	33	27	81.8
Granular	130	123	94.6
Nucleolar	45	43	95.6
Centromeres	4	4	100
Nuclear dots	2	2	100
Cytoplasmic	58	54	93.1
ANA neg.	79	77	97.5
Total	**351**	**330**	**94.0**

EUROPattern n = 351	Visual evaluation	
	Positive	Negative
Positive	272	2
Negative	0	77
Agreement	99.4 %	
κ value	0.984	
Sensitivity	**100 %**	
Specificity	**97.5 %**	
Pos. prediction value	99.3 %	
Neg. prediction value	100 %	

Voigt et al. Clin Dev Immunol (2012)

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EUROPattern performance parameters

Automated microscopy

- Automated slide identification by DataMatrix codes
- Very fast transmitted light focussing and image recording (13 seconds/image) for cell substrates, tissues and EUROPLUS antigen dots – also in a mosaic

Automated image evaluation

- Automated compilation of individual results to one result per patient
- ANA: pattern recognition and titer determination (homogeneous, granular, nuclear dots, nucleolar, centromeres, nuclear membrane, cytoplasmic, negative; including all mixed pattern combinations)
- ANCA: pattern recognition and titer determination for screening and confirmatory tests together in one mosaic (cANCA, pANCA, atypical ANCA; including all mixed pattern combinations)
- Crithidia luciliae, antigen-expressing cells and EUROPLUS: classification of the results as positive or negative
- Adjustment of configuration to laboratory-specific values (e.g. sensitivity)

Diagnostics by the expert

- Efficient verification of all negative samples with one mouse click
- Computer-aided dilution suggestions for strongly positive samples
- Detailed display of positive sample results and confirmation of the diagnostic suggestions for each patient
- Manual live microscopy activatable directly from the diagnostic view
- Digital transmission of results to the laboratory information system (LIS)

Scope of delivery

- EUROPattern microscope (incl. cameras, cLED, DataMatrix code reader, 20x objective, 3D manual control)
  - Optional: oculars, 10x objective, 40x objective, RealDrive manual control
- Magazine and carrier for automated slide loading (500 fields)
- PC system incl. control software for the EUROPattern microscope, high-resolution screen
- EUROPattern pattern recognition and result input software
- EUROLabOffice

Technical data

- Breadth x depth x height: approx. 51 cm x 66 cm x 85 cm
- Weight: approx. 82 kg
- Power supply: 110–240 V, 60 W, 50/60 Hz
- cLED light source for transmission light fluorescence microscopy
  - Constant excitation light source (460–490 nm)
- LED light source for transmitted light focussing
  - Constant light source (620–630 nm)

Subject to changes

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