

CAL 8000

Cellular Analysis Line

Diverse configuration to meet all kinds of demands

CAL 8000 **111**



• Width×Height×Depth: 3580 x 1470 x 1030(mm) • Weight: 1250kg

CAL 8000 **211**



• Width×Height×Depth: 4470 x 1470 x 1030(mm) • Weight: 1550kg

CAL 8000 **422**



• Width×Height×Depth: 8240 x 1479 x 1030(mm) • Weight: 2700kg

www.mindray.com

P/N:ENG-CAL 8000-210285x12-20220324

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mindray
healthcare within reach

CAL 8000 **NEW**

Cellular Analysis Line With Digital Cell Morphology Analyzer

Smarter workstation,
simpler workflow

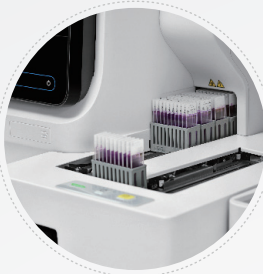


CAL 8000
Cellular Analysis Line

NEW MC-80 Automated Digital Cell Morphology Analyzer



MC-80 provides ultra resolution images to reappear the real view under the microscope. By using advanced Multi-layer fusion technology, it simulates manual focus adjustment and accurately restores the pathological features of cells, which is helpful for early screening of blood diseases (such as acute promyelocytic leukemia) and infectious diseases.



60 Slides/hour
Industry-leading high throughput

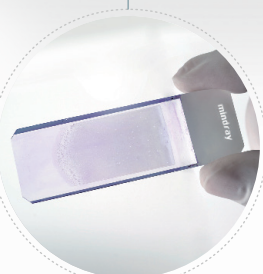
The throughput of MC-80 is 60 slides/h, which guarantees the ultimate efficiency.



The stock yard can hold up to 300 sample tubes at a time. From here the users can select the sample tubes which need further analysis.



Mindray supports multiple staining protocol, such as Wright stain, Wright-Giemsa stain, and May-Grunwald-Giemsa stain



Mindray provides original slides to ensure quality of blood smears and reliable performance of SC-120.



All reagents as well as the pneumatic unit can be set in the trolley below respective BC-6800Plus or SC-120. In this manner, the reagents and pneumatic unit are well organized permitting easy reagent replacement.



BC-6800Plus offers a throughput of up to 200 samples per hour, greatly improving the efficiency of CAL 8000. With the newly designed optics and reagent systems, the 3D 5F-Cube fluorescent technology can help doctors to better differentiate the clusters of cells, which is key to revealing more abnormal cells. To bring more clinical value to our customers, BC-6800Plus provides NRBC result in every CBC + DIFF test without extra reagents and cost. To improve the accuracy of abnormal platelet detection, the patented multiple sampling method (PLT 8X) is used to analyze samples with low PLT value. WBC 3X is used to analyzer samples with low WBC value as well.



Re-exam: transport the samples that require blood smears, as per the pre-defined re-exam criteria

The re-exam criteria on CAL 8000 can be defined by many conditions, such as patient age, gender, department, historical result etc. This helps minimize the number of blood smears.



Repeat: repeat the previous test (in case of some system errors)

Rerun: keep the previous test result, and rerun the sample in the same test mode (for suspect results)

Reflex: add some test items such as “PLT-O” (in case of suspected results)

The CAL 8000 can automatically distribute the samples with “Repeat”, “Rerun” and “Reflex” criteria which are pre-defined by users.



The touch screen is the “brain” of CAL 8000. It optimizes the distribution of workload between each BC-6800Plus unit and decides which sample requires a blood smear. It displays the status of each BC-6800Plus or SC-120 installed on CAL 8000 as well as the volume of balance reagent. This intuitive software can tell the users all necessary information of CAL 8000 at any given time. Consequently, the users will spend less time operating CAL 8000 and arrange their working schedule better.

The start yard can hold up to 200 sample tubes at a time. The STAT position provides an option for a faster blood count.



The special tube racks utilize different barcodes to differentiate specific usages, such as “QC”, “Slide making & staining only” and “RET test only”. The special tube racks can carry the tubes to perform these specific functions in the simplest way.

Turn module

The turn module can turn the sample racks in another direction.

Stock yard

The start yard and stock yard can be located at the same or different sides.

Start yard

Buffer module

Step 2

Manual review of sample results by labXpert

Step 1

Samples waiting in the buffer module

Step 3

Delivering samples for slide making, rerun, reflex or to stock yard according to orders from labXpert

CAL 8000 optional parts

Additional stock yard

300 sample tubes

Additional start yard

580 sample tubes

Start yard

200 sample tubes

Additional stock yard

300 sample tubes

Stock yard

300 sample tubes

Extended track

A complete cellular analysis solution

More analyzers, CRP analyzer and concentrated reagent delivery system can be integrated into the CAL 8000

CRP-M100 Automated CRP Analyzer

100 CRP tests per hour

CR-30[H] Concentrated Reagent Delivery System

Highly efficient diluent preparation meets the whole line operation at full capacity.

- Replace reagent once a week
- Replace DCT diluent without interrupting workflow
- Directly provide deionized water for SC-120
- Reliable and stable performance of diluted reagent

More flexible layouts with the CAL 8000 optional parts

Outer L-shaped layout

Inner L-shaped layout


1, 2, 3 Load & Go

Just by following 3 simple steps of “load and go”, operators of SC-120 Slide Maker & Stainer are able to obtain finished slides which are ready for microscopic analysis. Up to 150 blank slides and 10 cassettes holding 10 slides each can be loaded at a time.

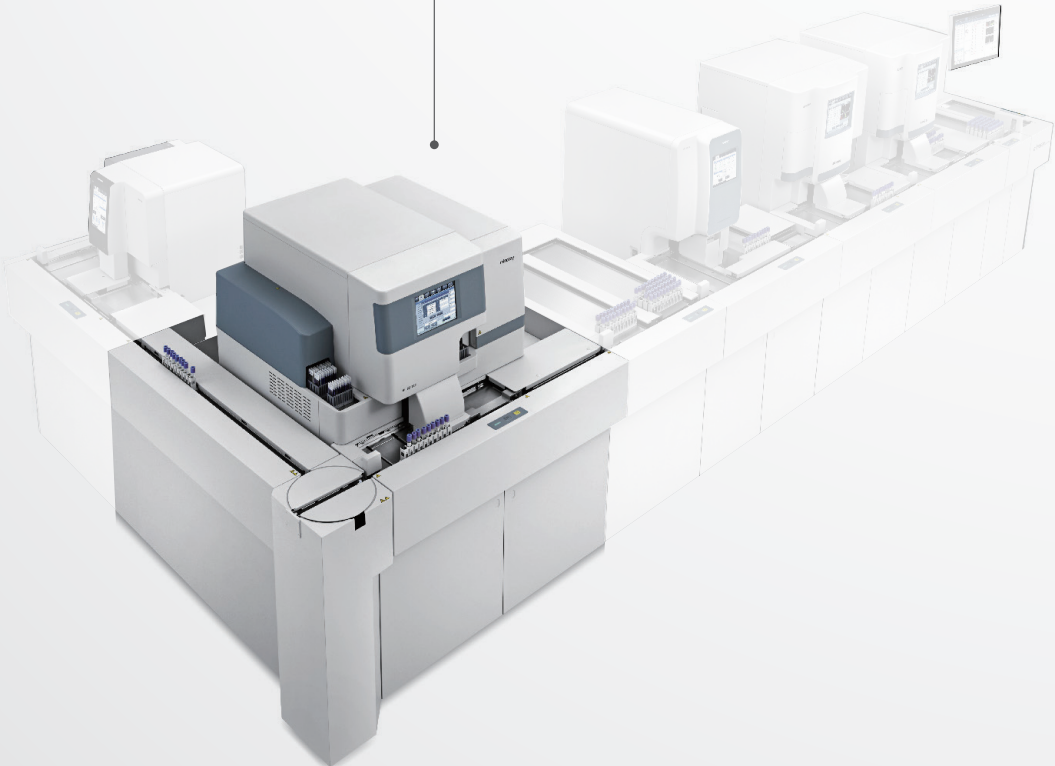
1 Load slides

2 Load cassettes

3 Go finished slides



The SC-120 can make smears from capillary samples as minimum samples required is only 25ul.



Capture comprehensive pathological features of each cell

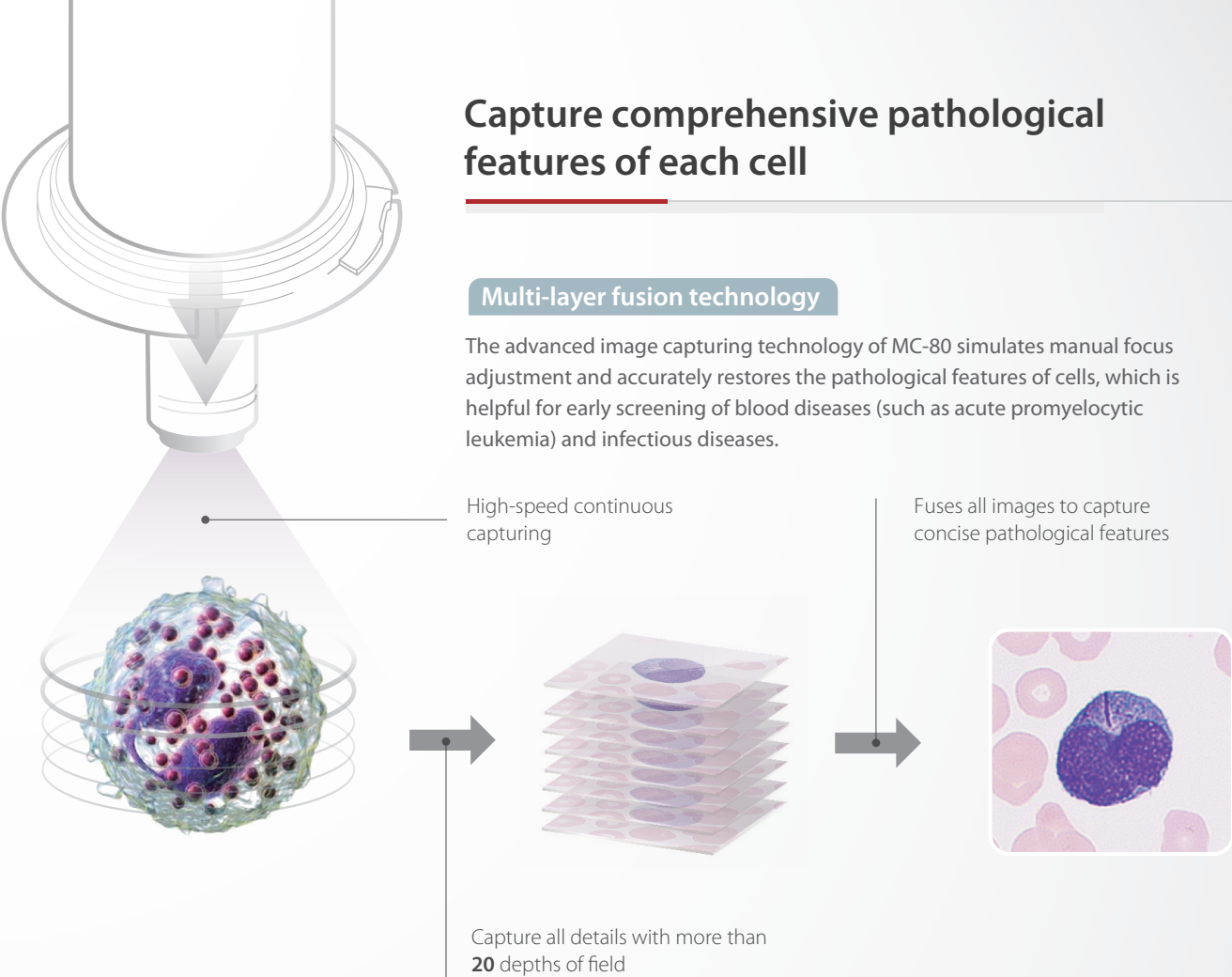
Multi-layer fusion technology

The advanced image capturing technology of MC-80 simulates manual focus adjustment and accurately restores the pathological features of cells, which is helpful for early screening of blood diseases (such as acute promyelocytic leukemia) and infectious diseases.

High-speed continuous capturing

Fuses all images to capture concise pathological features

Capture all details with more than 20 depths of field



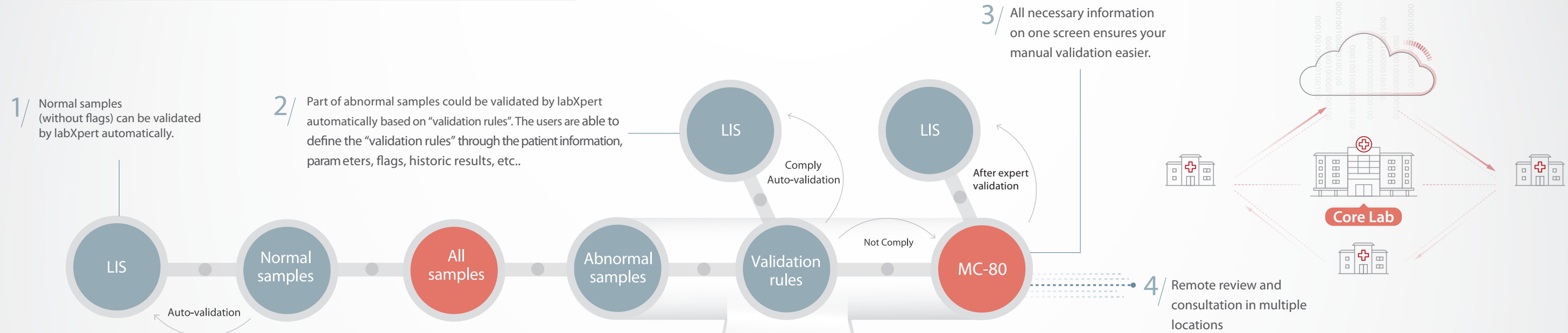
Achieve smarter process and less manual intervention via intelligent analysis rules

High-speed FLY-MODE ensures accurate PLT clump identification

Low PLT value detected

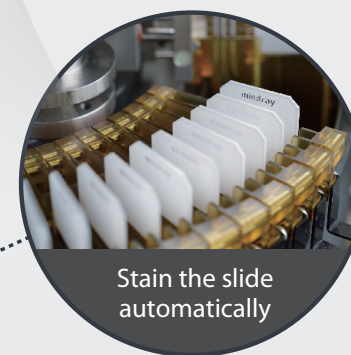
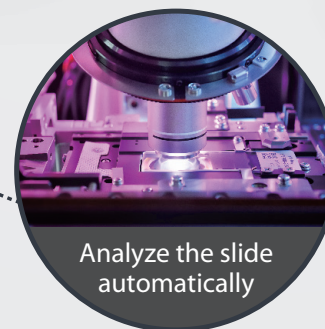
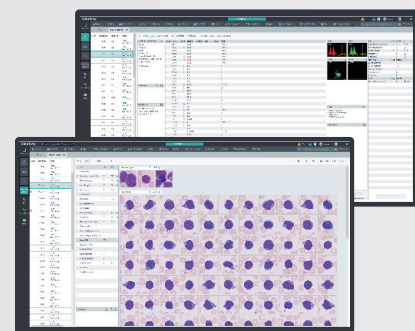


New working procedure help you enhance the efficiency



The labXpert software optimizes following functions to simplify your workflow for data analysis:

- Improved re-exam criteria function with multi-conditions setup
- Auto-validation for normal samples
- More intuitive interface to review and validate pathological samples



The CAL 8000's onboard management software can help users organize their working hours better because it displays:

- The working status of each BC-6800Plus and SC-120
- The working status of the track
- The reagent monitoring including dead volume, number of tests left, expiration date, etc.



BC-6800Plus

Auto Hematology Analyzer

Principles

SF Cube* method to count WBC, 6-part diff, NRBC, ERP and PLT-O
Focusing Flow-DC method for RBC and PLT
Cyanide free reagent for hemoglobin test
*S: Scatter; F: Fluorescence; Cube: 3D analysis

Parameters

37 Reportable parameters (whole blood): WBC, Lym%, Mon%, Neu%, Bas%, Eos%, IMG%, Lym#, Mon#, Neu#, Eos#, Bas#, IMG#; RBC, HGB, HCT, MCV, MCH, MCHC, RDW-CV, RDW-SD, NRBC#, NRBC%; PLT, MPV, PDW, PCT, P-LCR, P-LCC, RET%, RET#, RHE, IRF, LFR, MFR, HFR, IPF
48 Research parameters (whole blood): HFC#, HFC%, RBC-O, PLT-O, PLT-I, WBC-O, WBC-D, TNC-D, IME%, IME#, H-NR%, L-NR%, NLR, PLR, WBC-N, TNC-N, InR#, InR%, Micro#, Micro%, Macro#, Macro%, RPI, H-IPF, IPF#, MRV, FRC#, FRC%, PDW-SD, Neu-X, Neu-Y, Neu-Z, Lym-X, Lym-Y, Lym-Z, Mon-X, Mon-Y, Mon-Z, SRBC, LRBC, SMCV, LMCV, MCHr, HDW, MPM, MPC, HYPER%, HYPO%
7 Reportable parameters (body fluid): WBC-BF, TC-BF#, MN#, MN%, PMN#, PMN%, RBC-BF
11 Research parameters (body fluid): Eos-BF#, Eos-BF%, Neu-BF#, Neu-BF%, HF-BF#, HF-BF%, RBC-BF, LY-BF#, LY-BF%, MO-BF#, MO-BF%

2 Histograms for RBC and PLT
4 Three-dimension scatter grams: DIFF, WNB, RET, ERP
7 Two-dimension scatter grams: DIFF, WNB, RET, RET-EXT, PLT-O, RBC SCT, RBC VHF

Mode

CBC, CBC+DIFF, CBC+DIFF+RET, CBC+RET, RET

Data storage capacity

Up to 100,000 results including numeric and graphical information

Operating environment

Temperature: 15℃~32℃
Humidity: 30%~85%

Performance

Parameter	Linearity Range	Precision	Carryover
WBC	0-500×10 ⁹ /L	≤2.5% (≥4×10 ⁹ /L)	≤1.0%
RBC	0-8.60×10 ¹² /L	≤1.5% (≥3.5×10 ¹² /L)	≤1.0%
HGB	0-260g/L	≤1.0% (110-180g/L)	≤1.0%
HCT	0-75%	≤1.5% (30%-50%)	≤1.0%
PLT	0-5000×10 ⁹ /L	≤4.0% (≥100×10 ⁹ /L)	≤1.0%
RET#	0-0.8×10 ¹² /L	≤15% (RBC≥3×10 ¹² /L; 1%≤RET%≤4%)	/

Sample volume

Whole blood (Autoloader)	190uL
Whole blood(Open vial)	130uL
Predilute (Open vial)	40uL
Body fluid (Open vial)	130uL

Throughput

Up to 200 samples per hour (CBC+DIFF)
Up to 120 samples per hour (CBC+DIFF+RET)
Up to 120 samples per hour (RET)
Up to 40 samples per hour (Body fluid)

Loading capacity

Up to 100 sample tubes



BC-6800Plus

Auto Hematology Analyzer

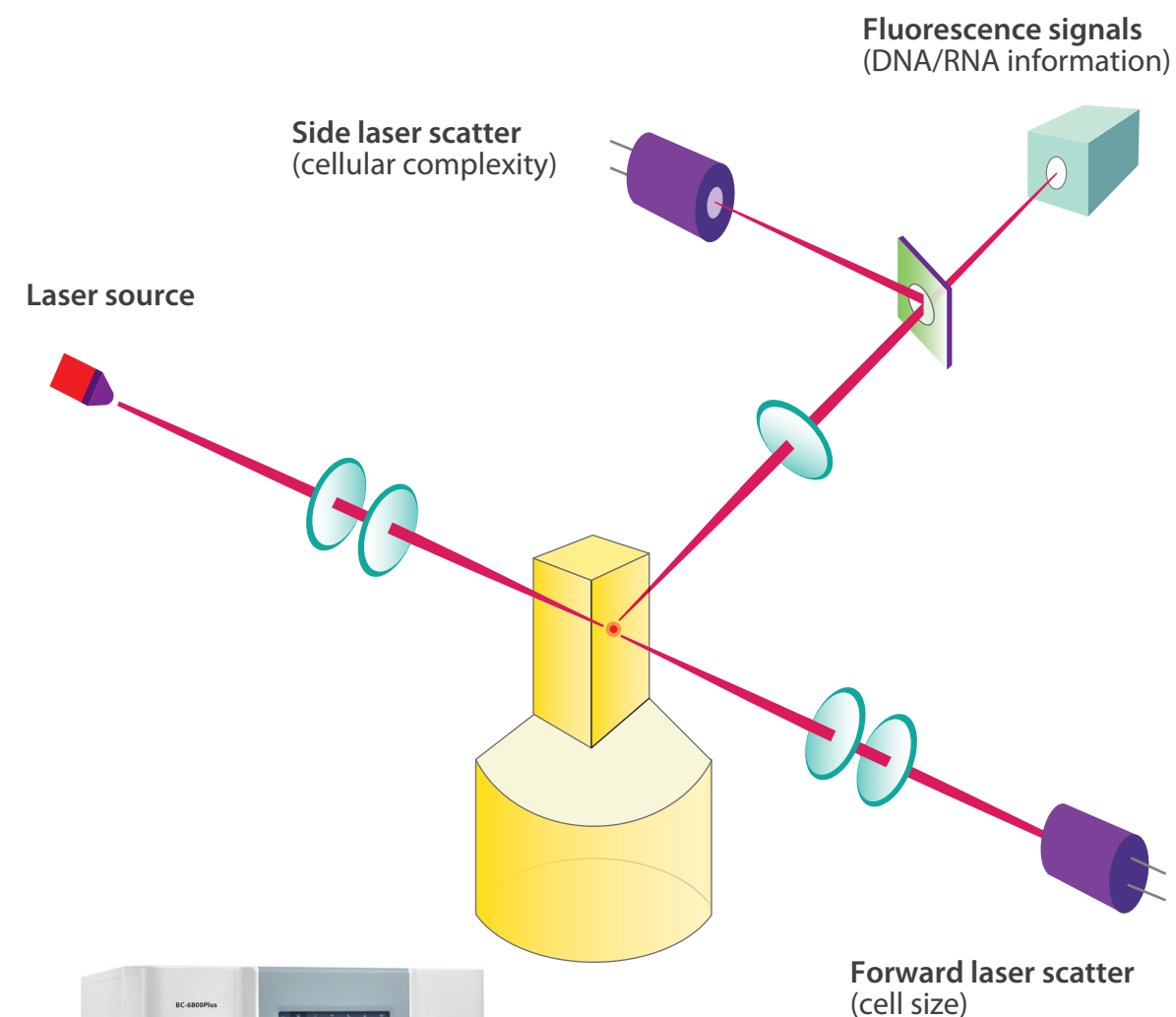
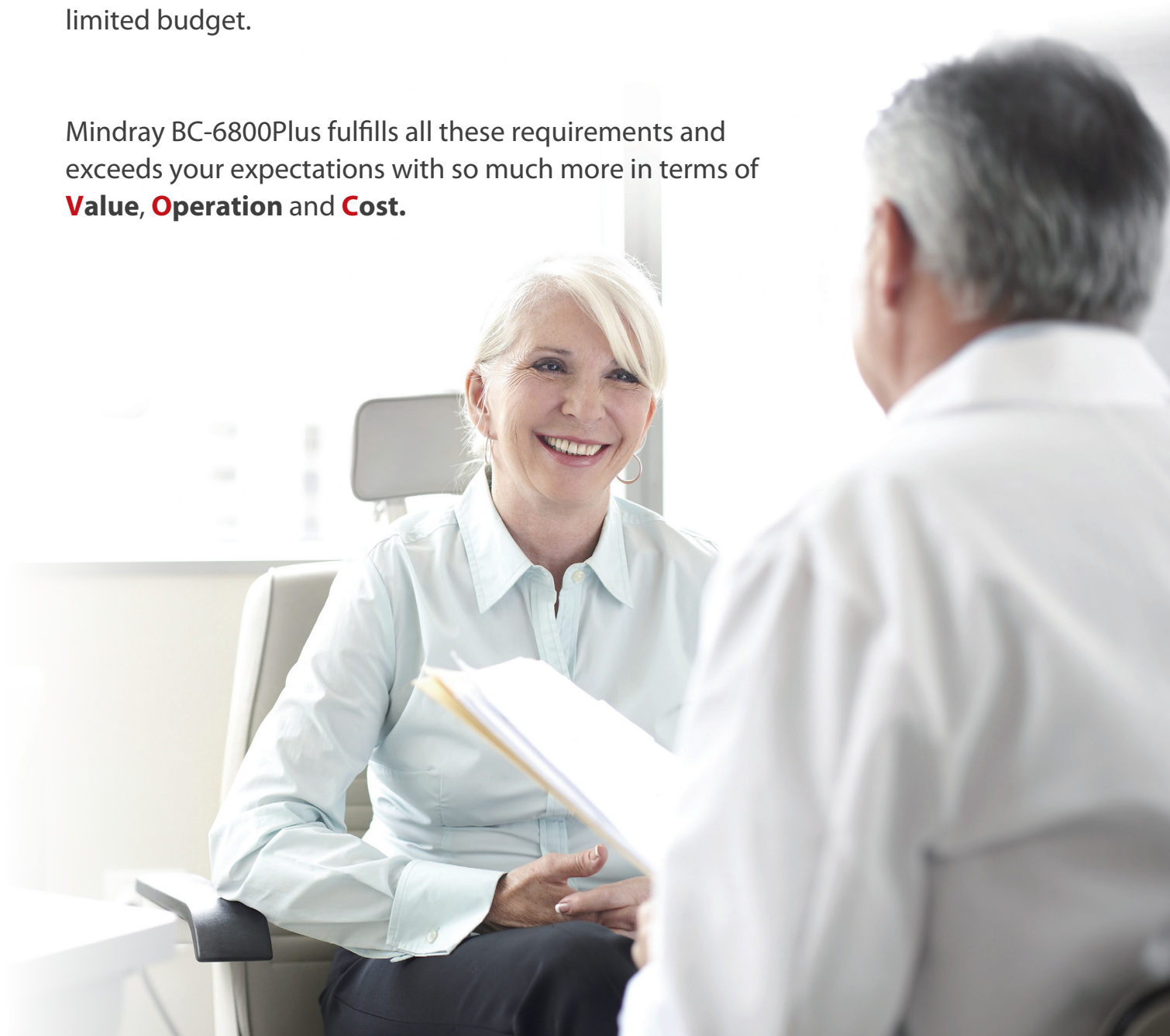
More than Fast





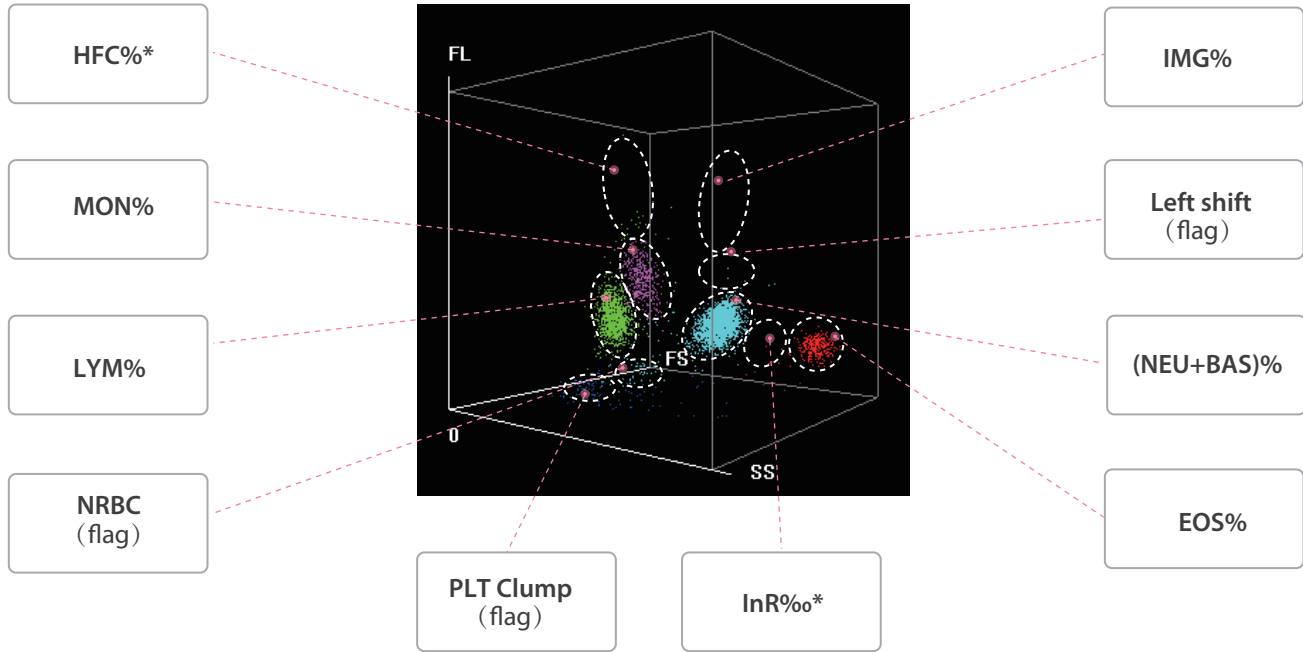
At Mindray, we seek to understand the needs of every customer, and deliver tailor-made solutions. Before designing any product, we listen to the **Voice Of Customers** and bear in mind the challenges they face. In today's laboratories, lab managers are looking for an analyzer with greater clinical values, such as higher flagging efficiency to reduce the ratio of microscopic examination, NRBC/RET/body fluid results generated in a high-speed system, among others, all within limited budget.

Mindray BC-6800Plus fulfills all these requirements and exceeds your expectations with so much more in terms of **Value, Operation and Cost.**



With the newly designed optics and reagent systems, the SF Cube technology can help doctors to better differentiate the clusters of cells, which is the key to revealing more abnormal cells.

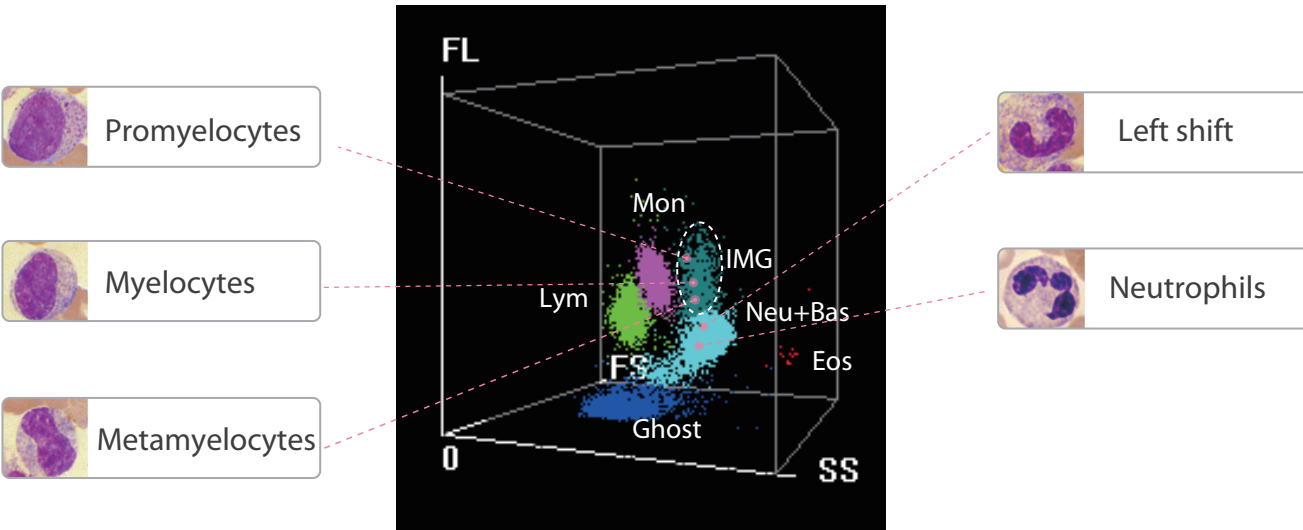
DIFF Channel



In DIFF scattergram, BC-6800Plus not only gives WBC 6-part differential results (with immature granulocyte), but also brings research parameters such as HFC (Blast & Atypical Lymphocyte), InR (information about malaria) and flags for Band, NRBC, PLT clump and Atypical Lymphocyte.

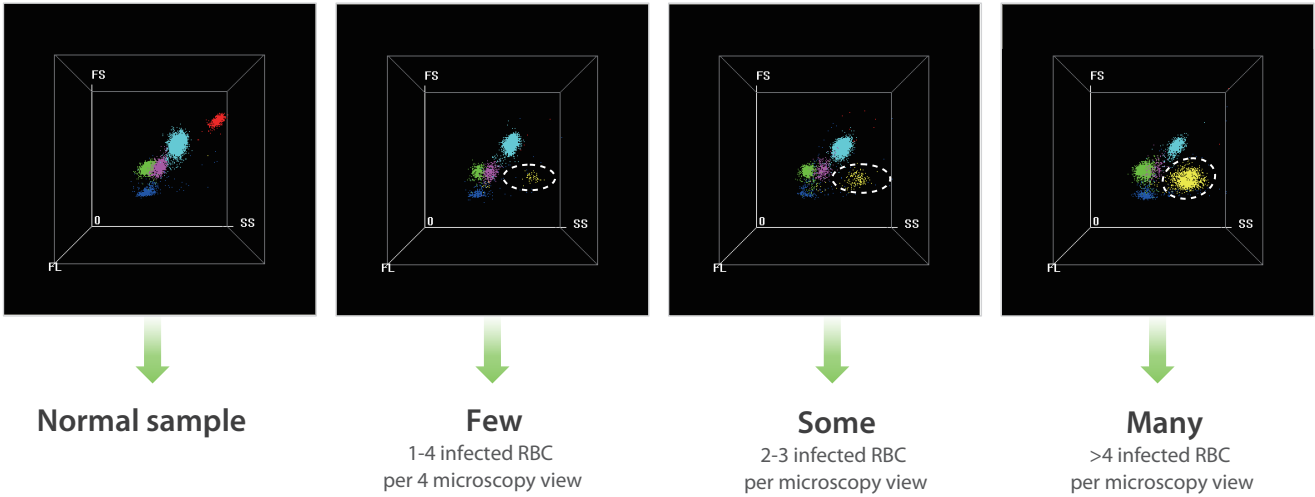
HFC*(#, %) parameters represent high population of fluorescent cell, such as Blasts and Atypical Lymphocytes.

IMG(#, %) parameters provide information about immature granulocytes, including Promyelocytes, Myelocytes, Metamyelocytes, Immature Eosinophils and Immature Basophils.



*For research use only

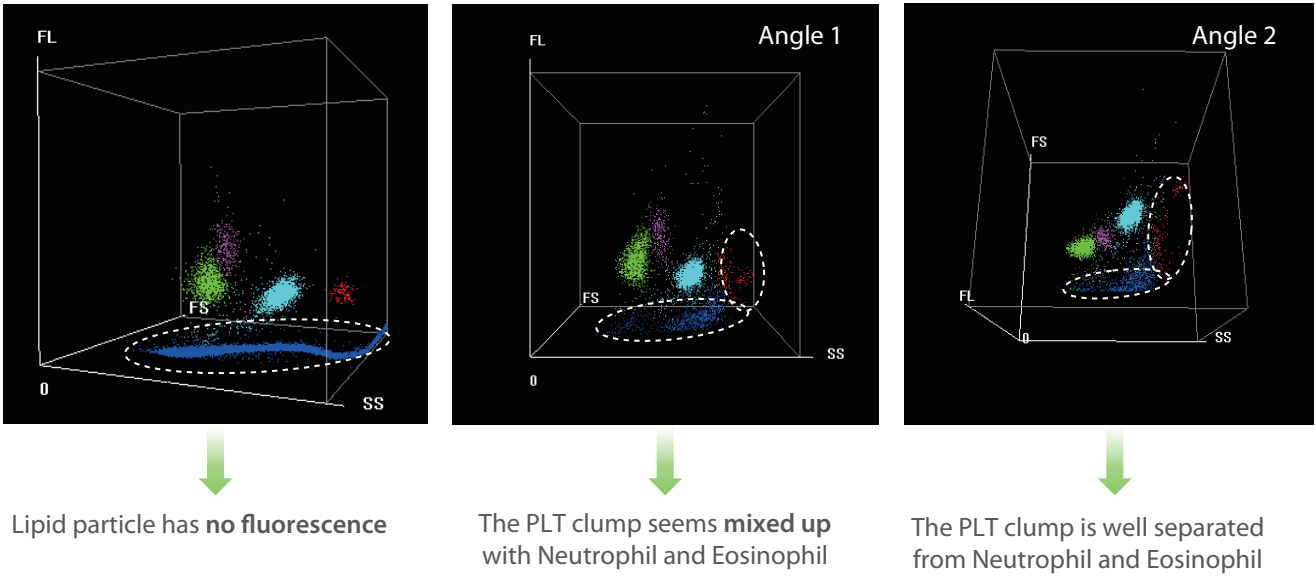
Malaria screening



Note: The yellow scatters are just for highlight.

BC-6800Plus provides a dedicated flag called “infected RBC?”, and “InR*(#,%)” parameters to represent the number and ratio of the infected red blood cells in the sample respectively. BC-6800Plus users can obtain information about the possible presence of plasmodium parasite, the causative agent of malaria infection. With the rising number of red blood cells with malaria parasites, the number of dots in the “InR” area increases proportionately. This creates the possibility to not only screen but also judge the severity of malaria infection.

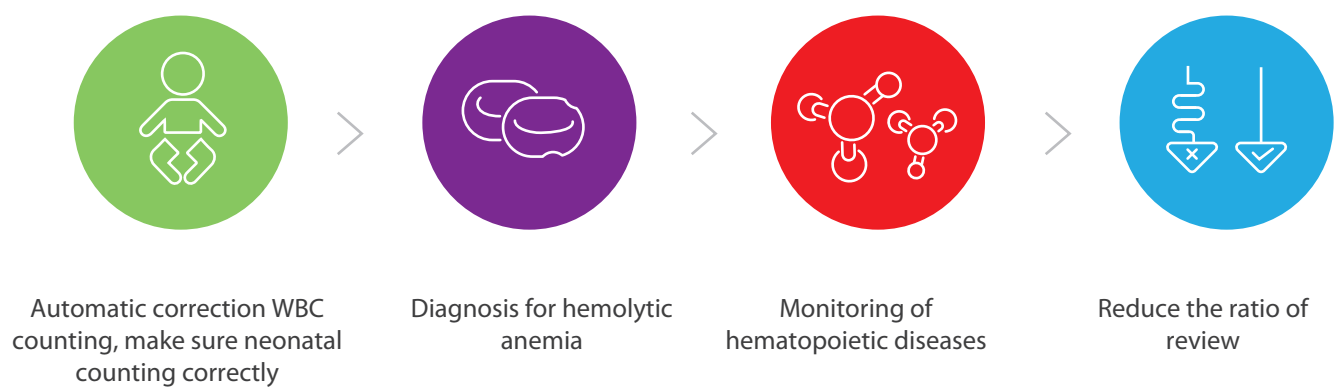
Interference prevention



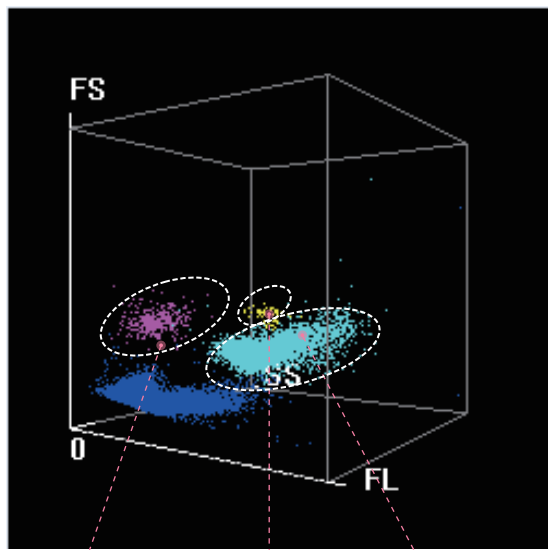
In DIFF scattergram, WBCs are dyed, but not lipid particles, by fluorescence, which prevents interference and ensures more accurate WBC results. With information obtained through the 3D analysis, PLT clumps are well separated from each cluster of WBCs.



NRBC results in every CBC



WNB Channel



In WNB scattergram, BC-6800Plus provides NRBC, Basophils and WBC-N* results. It means that the actual number of NRBCs can be measured in routine CBC, if they are present in the sample. Basophils are counted in this counting channel with NRBC results.

Basophil and NRBC results are generated on BC-6800Plus without extra reagent or cost.

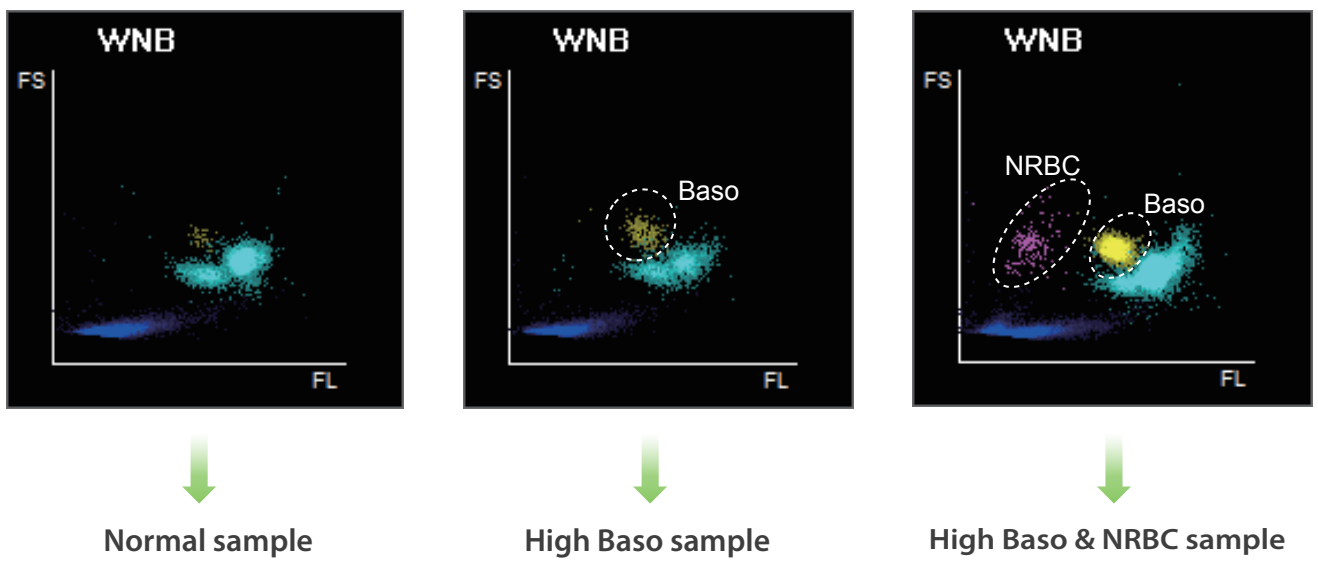
NRBC

Baso%

WBC-N *

**For research use only*

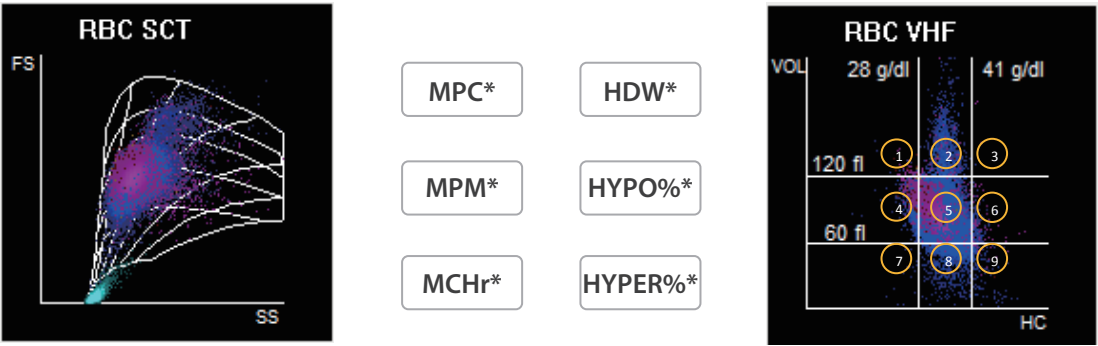
NRBCs do not usually exist in the peripheral blood except that of newborn children. Detection of NRBCs is essential in diagnosing and monitoring the hematopoietic diseases.



BC-6800Plus provides accurate results on samples even with high level of Basophils and NRBCs.

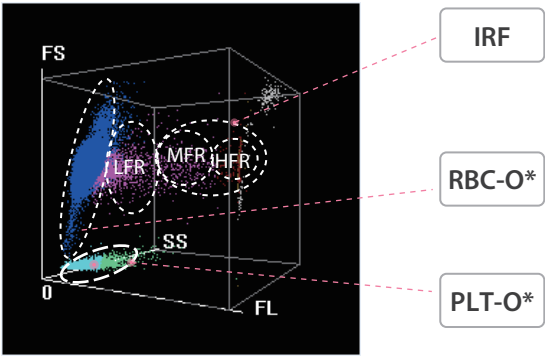
ERP Channel

ERP channel is able to generate 2 three-dimension scattergrams to count Erythrocytes(RBC), Reticulocytes(RET) and Plateletes(PLT) as well as 5 two-dimension scattergrams including RBC SCT, RBC VHF, RET, RET EXT, PLT-O.



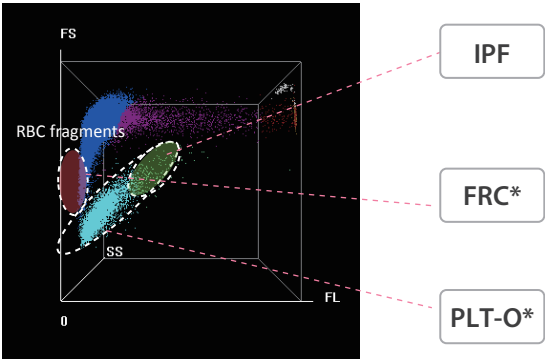
On RBC VHF scattergram, RBCs (blue) & RETs (pink) could be subdivided into 9 regions by cell size and hemoglobin concentration and provide research parameters such as MCHr, HDW*, HYPO%*, HYPER%* to assist the diagnosis of iron deficiency anemia. MPC* and MPM* reflect the density and concentration of contents inside PLTs, which signifies the excitation status of platelets in peripheral blood. They provide a new approach to assist the diagnosis of thrombotic diseases, cardiovascular diseases and inflammations.

RET parameters



With the SF Cube cell analysis technology, Reticulocytes are differentiated from the other red cells by their reaction with fluorescent stain. Besides the traditional parameters such as RET# and RET%, BC-6800Plus provides data concerning immature reticulocytes (IRF), which can assist in early diagnosis of anemia and monitoring the bone marrow response to therapy.

PLT-O & RBC fragments

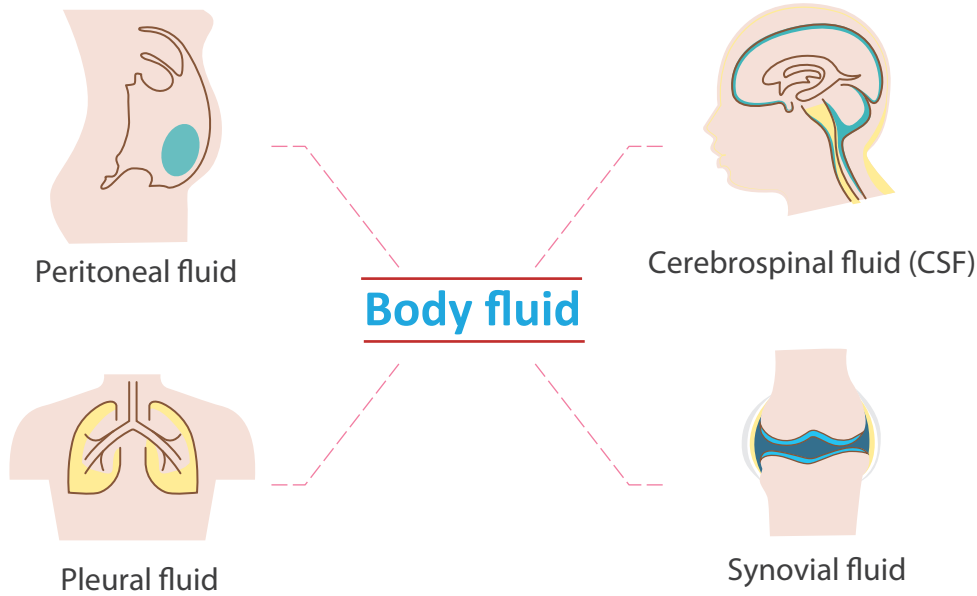


In ERP channel, PLT-O* can prevent the interferences of Fragmented Red Cells(FRC*) and offer more accurate PLT count compared to traditional technology. IPF measures the Immature Platelet Fraction, which can be used to reflect thrombopoiesis capabilities of patients.

*For research use only

Body fluid

Besides blood specimen, BC-6800Plus also has body fluid test function without requiring dedicated reagent. The various types of body fluids include Peritoneal fluid, Pleural fluid, Cerebrospinal fluid (CSF) and Synovial fluid.



Applicable to variety of tubes

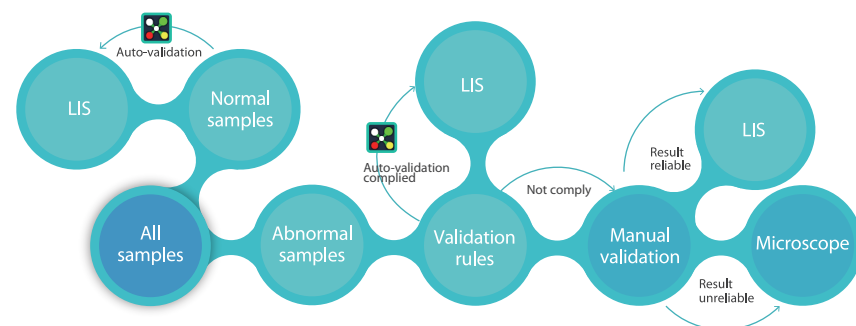
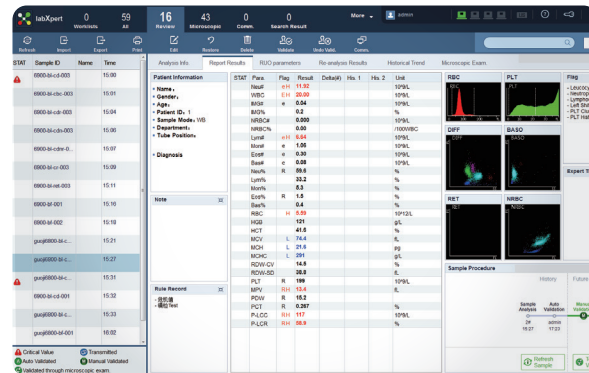
To cater to customer's diversified needs, different types of blood collection tubes can be used on BC-6800Plus , including regular whole blood vacuum tube, capillary blood microtainer tube and Sarstedt tube.



More Intuitive labXpert software

LabXpert is a standard configuration of BC-6800Plus for professional data analysis.

The labXpert software optimizes functions to simplify your workflow for data analysis including improving re-exam efficiency, auto-validation for normal samples; it also provides more intuitive interface for you to review and validate pathological samples.



Operation

Cost



Less testing time

BC-6800Plus can load up to 100 samples at a time and offers a throughput of up to 200 tests per hour.



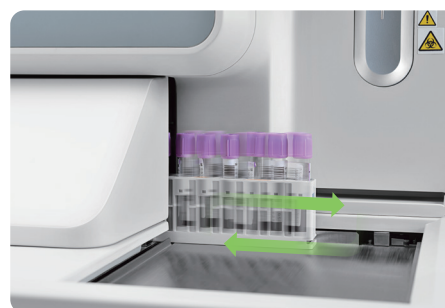
Touch screen

BC-6800Plus can work standalone and has touch screen for basic operation by more intuitive software.



Easy maintenance

The only maintenance for end user is daily shut down by probe cleanser or probe cleanser cleaning once per day (if not shut down). The “auto-protect” program reminds operators when maintenance is needed (if not shut down).



Automatic Rerun & Reflex

Should the sample results trigger the criteria, the autoloader of BC-6800Plus can return the sample racks for an automatic rerun or reflex check.

MC-80

Automated Digital Cell Morphology Analyzer

Technical Specifications

Analysis mode

WBC, RBC+PLT, PLT-Pro, Digital Slide

Different combinations of analysis mode could be triggered according to the results of hematology analyzer.

Throughput

Peripheral blood: up to 60 Slides/hour (100WBC+RBC+PLT)

** Values provided are approximate due to WBC concentration, number of non-WBCs and quality of the smear.*

Oiling Method

Automatic oil dripping

Slide Storage Capacity

Up to 60 completed slides at the same time

Quality Control

Cell location accuracy test for the verification of the hardware and stain quality

Communication

Bi-directional LIS

Ethernet 10/100/1000 Mbps

Supported Printers

Laser/inkjet printers supported by Windows

System Components

labXpert software

Computer with operating system of Windows 10 or above

Data Storage Capacity

Up to 80,000 samples

Support data and cell images archiving of peripheral blood slides

Operating Environment

Ambient temperature: 15℃~32℃

Relative humidity: 30%~85%

Atmospheric pressure: 70.0kPa ~ 106.0kPa (Altitude height: -400 m to +3000 m)

Power Supply

Voltage: 100 V~240 V (allowable deviation:±10%)

Frequency: 50Hz/60Hz (allowable deviation: ±2Hz)

Power: 300VA

Dimensions and Weight

Analyzer dimensions

Width×Depth×Height ≤ 600mm×570mm× 700mm

Analyzer weight ≤100 kg

Diverse configurations to meet all kinds of demands

CAL 6000



Width×Depth×Height : 2970×1030× 810 (mm)

CAL 8000



Width×Depth×Height : 5360×1030× 1470 (mm)

MC-80

Automated Digital Cell Morphology Analyzer

More Clarity. More Intelligence.
More Productivity.



www.mindray.com

P/N:ENG-MC-80-210285X8P-20210926

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mindray
healthcare within reach

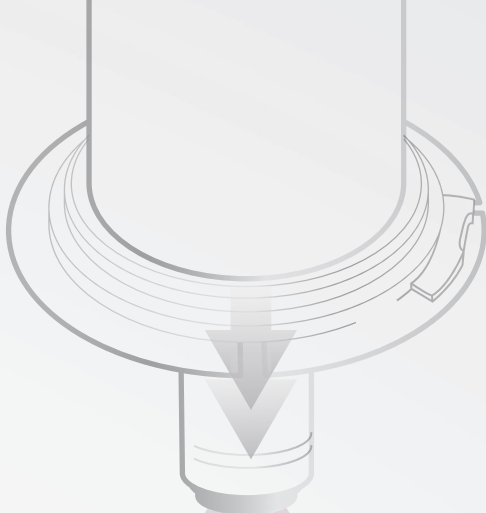
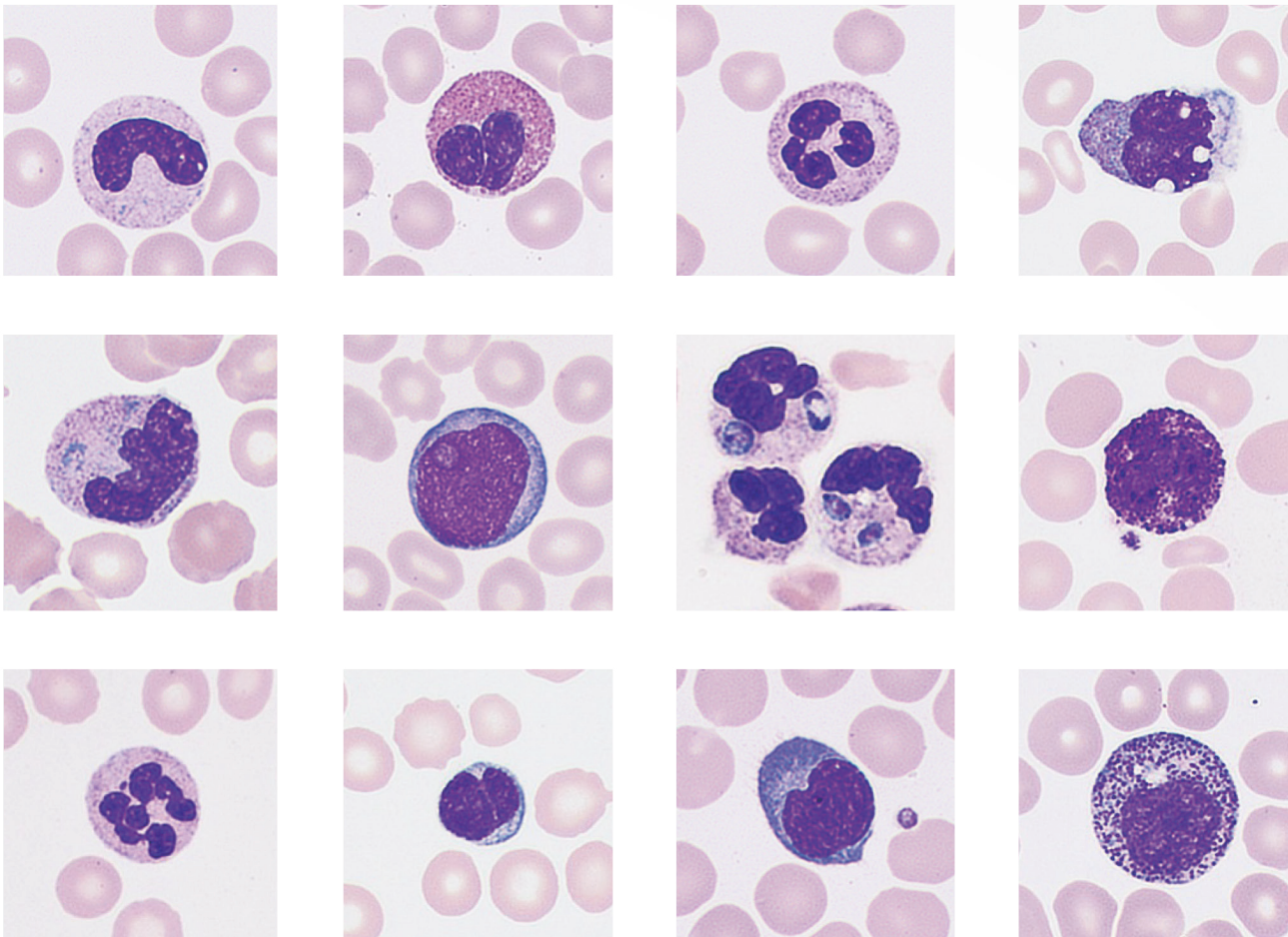
MC-80

Automated Digital Cell Morphology Analyzer

More Clarity

Display the ultra clarity and authenticity of each cell

The high-performance objective lens and advanced image sensor offer ultra resolution images to reappear the real view under the microscope.



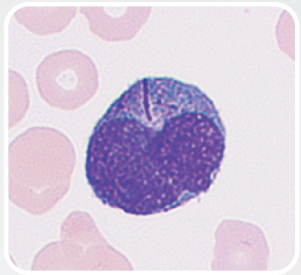
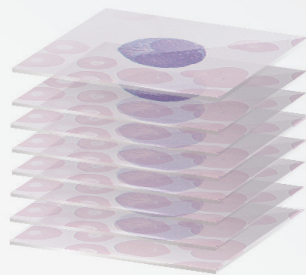
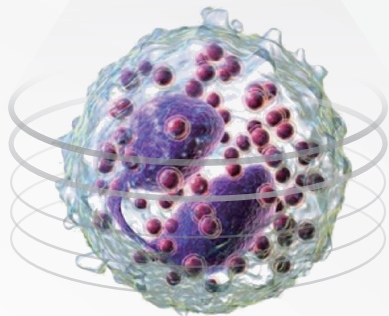
Capture comprehensive pathological features of each cell

Multi-layer fusion technology

Simulates manual focus adjustment and accurately restores the pathological features of cells, which is helpful for early screening of blood diseases (such as acute promyelocytic leukemia) and infectious diseases.

High-speed continuous capturing

Fuses all images to capture concise pathological features

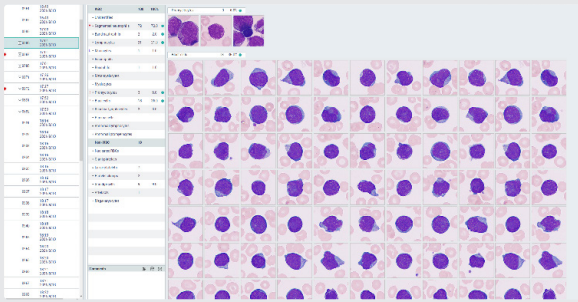


Capture all details with more than 20 depths of field

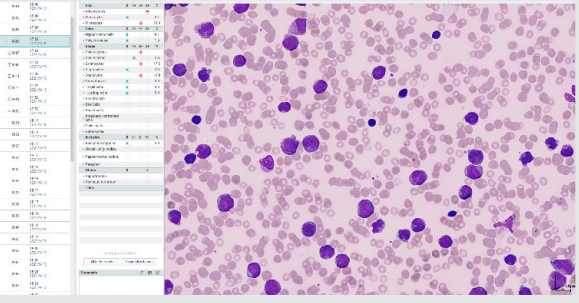


More Intelligence

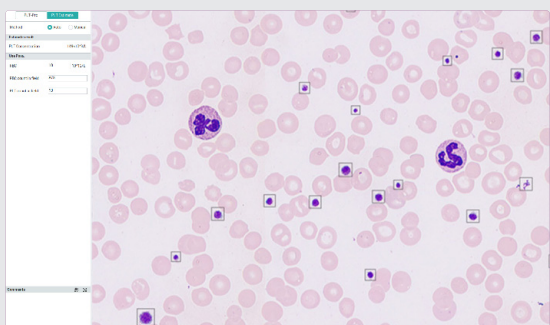
Reliable cell pre-classification and pre-characterization



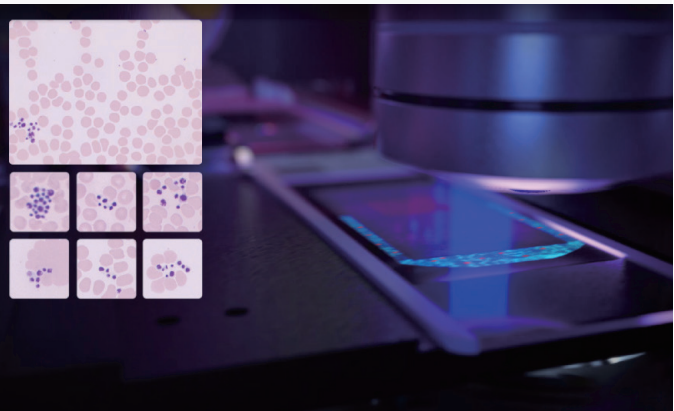
— Accurately pre-classifies white blood cells, especially abnormal cells, such as blast cells, reactive lymphocytes, etc.



— Pre-characterized RBC morphology can be modified with one click.

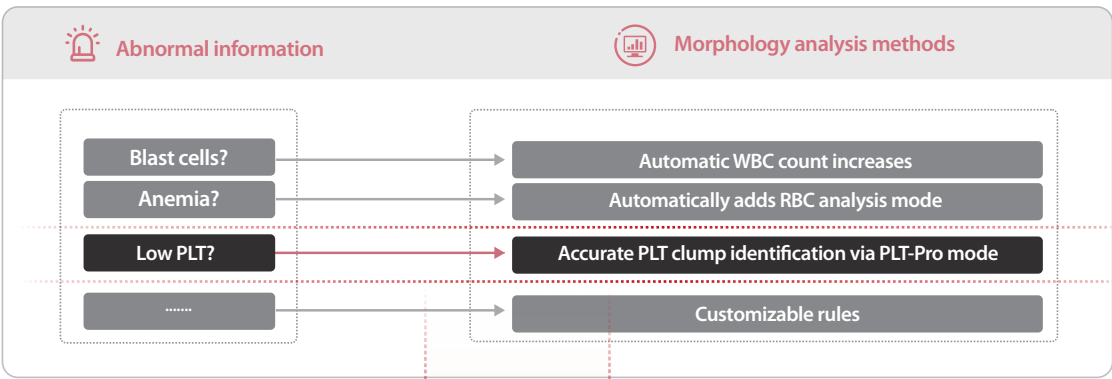
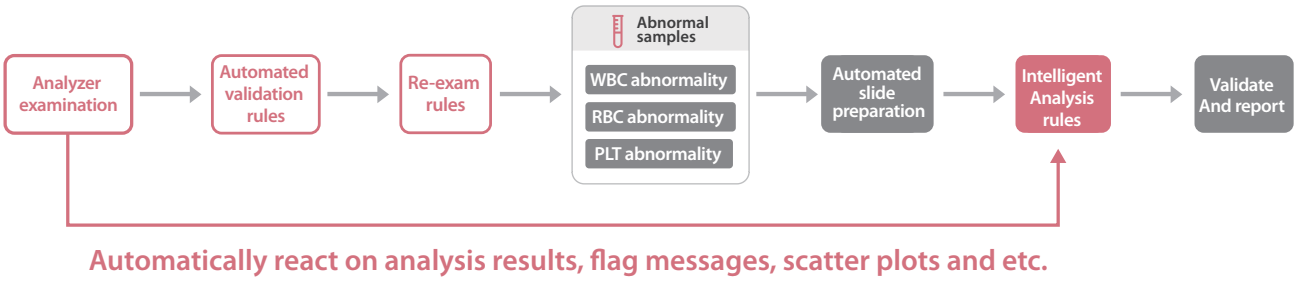


— PLT counting assistance

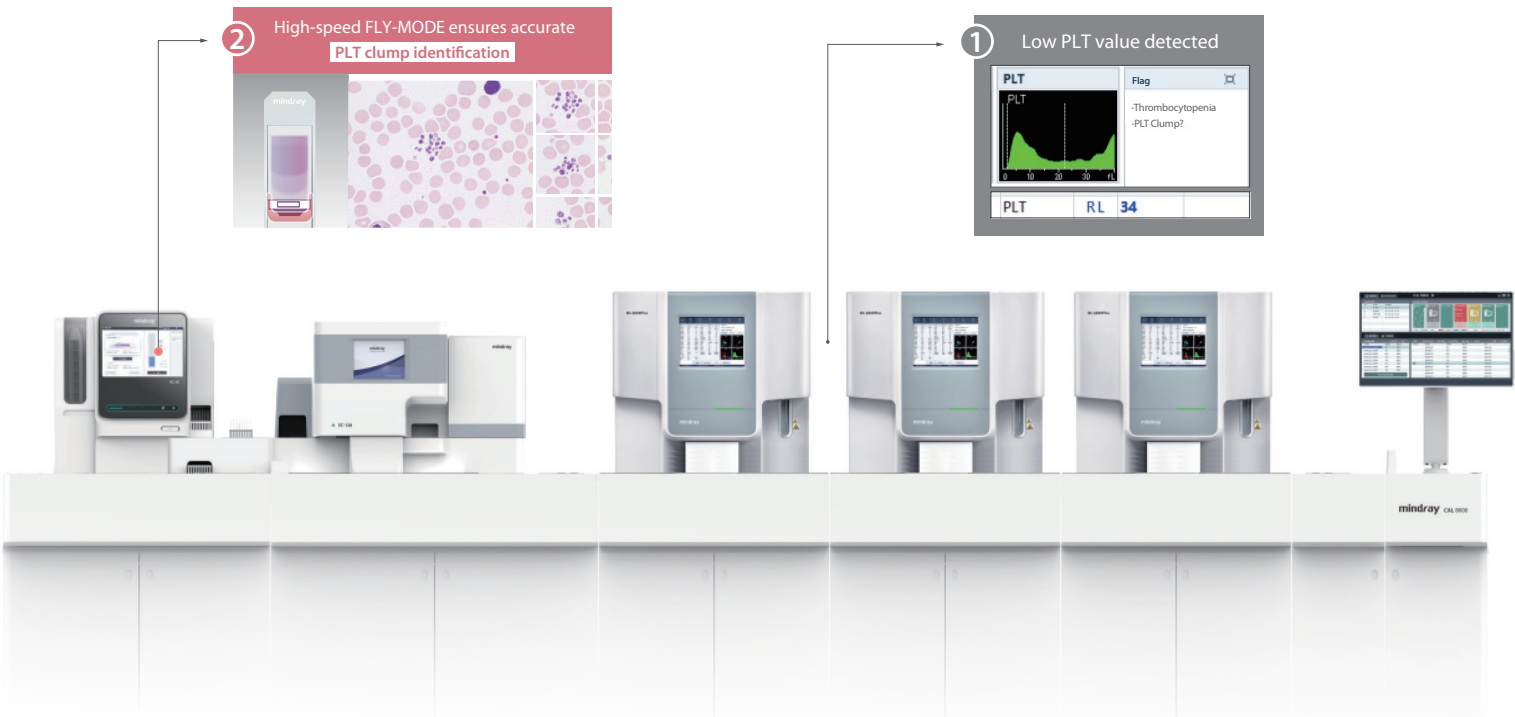


High-speed FLY-MODE ensures the accurate **PLT clump identification**

Intelligent analysis rules facilitate a smart process and less manual intervention



Smarter process and less manual intervention
via intelligent analysis rules



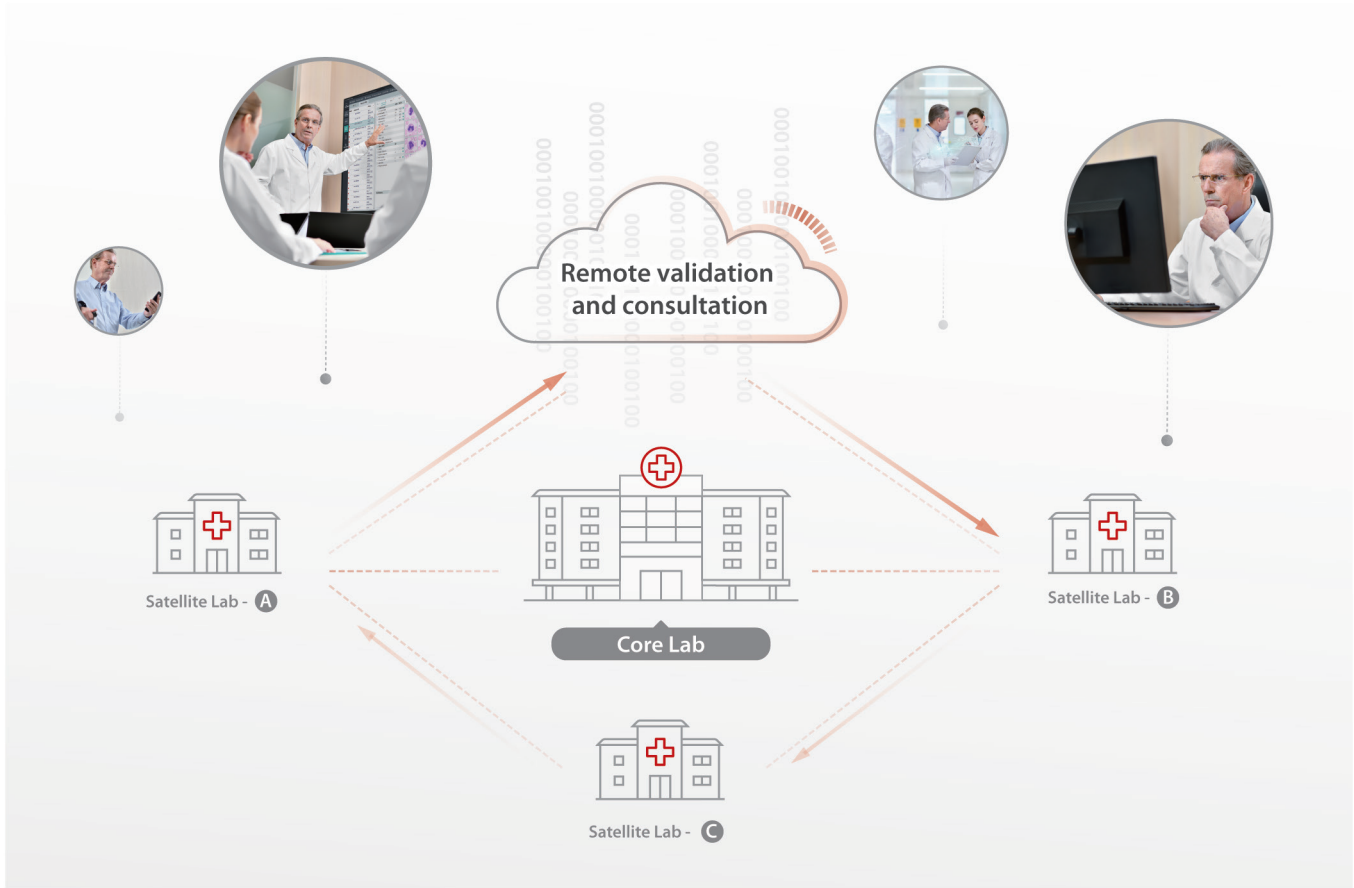
More Productivity



60 Slides/hour
Industry-leading high throughput

SOLID ROCK Hyper-stable anti-shake system: Aerospace materials and cutting-edge high-frequency exposure algorithm are integrated to eliminate blurred images.

Remote review and consultation in multiple locations



Automatically receives prepared smears



Easily search and take slides with one click



User-friendly and intuitive workflow



High-end touch screen for intuitive interactions



STAT function for urgent cases





SC-120

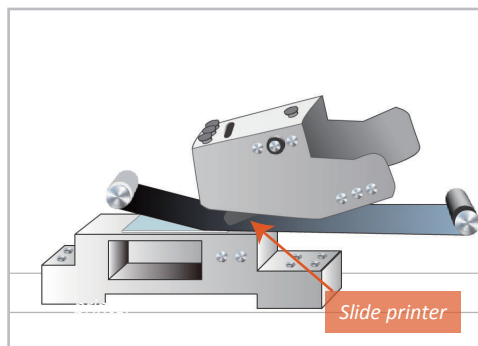
Slide Maker & Stainer

Reliable automation, High-class blood smear

mindray
healthcare within reach



The 7.8 inch LED touch screen is used for management of smear and reagent, performing basic operation and maintenance.



All patient information, including 1D or 2D barcode, number, as well as text could be printed on the frosted glass area of the slide with a durable thermal printer.

01 Reliable



Configurations

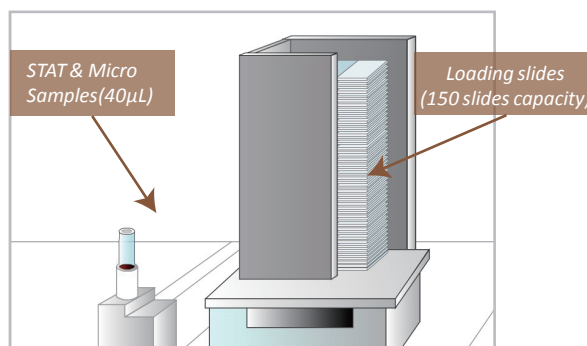
SC-120 is a standalone unit and it could also be integrated into the Mindray CAL 8000 cellular analysis line.



02 Automated



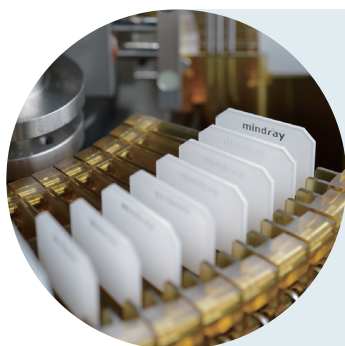
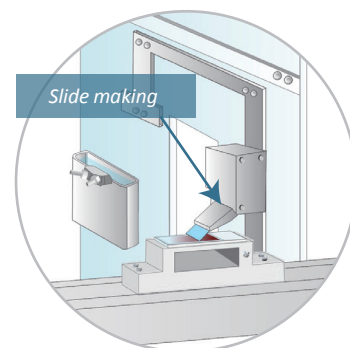
The cassette, which is used for carrying glass slides could be easily loaded from the front of SC-120, and be automatically transported inside by the track.



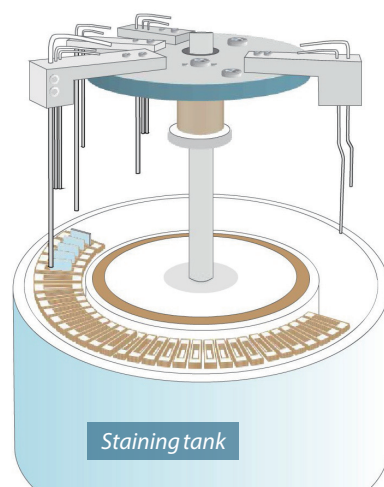
The STAT position ensures a faster blood smear preparation. This position can handle micro-samples requiring only 40μL blood, this is the smallest blood requirement in the hematology industry. Users are able to load up to 150 slides at a time into SC-120 for reducing the turn around time.

03 High class

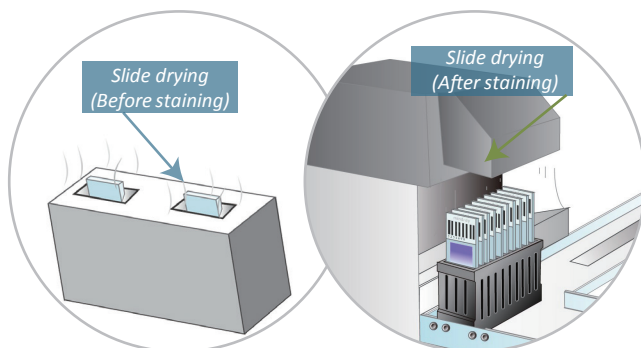
The blood spreader(or pusher) blade is made of highly durable sapphire glass. The blood volume requirement and the speed as well as angle of the blood spreader (or pusher) are automatically adjusted according to the blood sample's consistency.



Staining Cassette
Each staining cassette holds single slide for staining, this eliminates the problem of stain evaporation and these cassettes could be cleaned automatically without any manual interventions.



SC-120 supports the globally common stain protocols including Wright stain, Wright-Giemsa stain and May-Grunwald-Giemsa stain. The stain A could be recycled up to 20 times, this saves over 50% the stain compared to the conventional technologies.



All slides are heat dried before and after staining. This optimizes staining quality and reduces contamination risk for the users.

Output

Both, the stained and dried slides are held in the cassettes at the output area where they are ready for a microscope review.



SC-120

Slide Maker & Stainer

Technical Specifications

Technology

Automated slide making & staining by single instrument
Automated detection of blood consistency and automated adjustment of blood volume, angle & speed of spreader(or pusher) accordingly to optimize quality of smear (or blood film)

Stain protocols

Wright stain,
Wright-Giemsa stain
May-Grunwald-Giemsa stain
With possibility to recycle stains up to 20 times

Throughput

Up to 120 stained slides per hour

Sample volume

200µL (autoloader and on track mode)
40µL (Micro-sample mode)

Printer

Built-in thermal printer for printing patient information including:
1D or 2D barcode, Number and Text

Interface

LAN port * 1, USB port * 4

Configurations

Standalone or on track (CAL 8000 cellular analysis line)

Dimensions/Weight

Configuration	Unit	Width(mm)	Height(mm)	Depth(mm)	Weight(kg)
Standalone	Main unit	845	610	910	200
	Pneumatic unit	305	425	475	25
On track	Main unit	845	610	815	185
	Pneumatic unit(in conveyor)	/	/	/	/

Autoloader

Load up to 50 sample tubes at once, random access

Cassette

Load up to 10 cassettes at once, each cassettes can hold up to 10 sides

Reagents & Consumables

Stains, Buffer fluid, Diluent, Probe cleanser, slides (Mindray provided)
Methanol, Deionized water (Locally sourced)

Reagent consumption

User-definable permitting up to 20 times recycling of stains

Sample selectivity

Automatic slide making & staining based on user-definable re-exam criteria

Slide

1-5 slides at a time per sample

Spreader blade material

Sapphire glass

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