WPC

WHITE PATHOLOGICAL AND PRECURSOR CELLS

Know more.
Decide with confidence.
Act faster.

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Further classification of white blood cell abnormalities

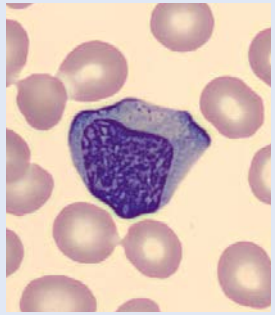
- ✔ Detection of white precursor and pathological cells
- ✔ Highly specific exclusion of suspected malignant cell types
- ✔ Support the assessment of reactive conditions
- ✔ Optional HPC mode

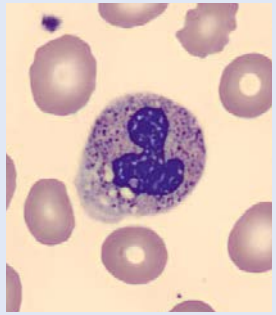
Optimise your workflow

Decrease unnecessary smear reviews by reducing the number of flagged samples.

Characterise the patient's immune response with Extended Inflammation Parameters

The combination of the RE-LYMP and AS-LYMP parameters, which quantify the numbers of all reactive lymphocytes and antibody-synthesizing lymphocytes, respectively, provides additional information about the cellular activation of the innate and adaptive immune response. Furthermore, the granularity and reactivity of neutrophils (NEUT-GI and NEUT-RI, respectively) reflect innate immune response to bacterial infections [1].





Your benefits in daily routine

- WPC analysis minimises the number of false-positive flagged samples from the DIFF. This streamlines and accelerates the laboratory workflow as it reduces the need to perform time-consuming and expensive follow-up tests that are required when a malignant condition is suspected.
- The combination of DIFF and WPC supports the differentiation between suspect malignant and reactive samples and allows deeper insight into the immune response status once malignant conditions have been excluded by the laboratory staff.
- Confidence that the right smears are performed and that no time is wasted on false-positive samples.
- Increased walk-away time thanks to automatic reflex testing.

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Diagnostic parameters with optional licences

Haematopoietic progenitor cell count	■ HPC%, HPC# (haematopoietic progenitor cell count)
Extended Inflammation Parameters	■ RE-LYMP%, RE-LYMP# (reactive lymphocyte count) ■ AS-LYMP%, AS-LYMP# (antibody-synthesizing lymphocyte count; highly fluorescent) ■ NEUT-GI (neutrophil granularity intensity) ■ NEUT-RI (neutrophil reactivity intensity)

Flagging information

If the flag **'Blasts/ Abn Lympho?'** or the combination **'Blasts/ Abn Lympho?'** and **'Atypical Lympho?'** are triggered by the DIFF analysis, WPC analysis will either further classify the abnormality by a more specific flag or remove the flag.

→ **'Blasts?'** flag: indicates the possibility that blasts are present (e. g. in acute leukaemias).

→ **'Abn Lympho?'** flag: indicates the possibility that suspected malignant lymphocytes are present (e. g. in chronic leukaemias or lymphomas).

→ **'Atypical Lympho?'** flag: indicates the possibility that suspect reactive lymphocytes are present (e. g. in infections or inflammations, allowing the use of Extended Inflammation Parameters).

→ **'Negative':** The high specificity of WPC analysis further filters out false-positive flagged samples.

Reflex testing

WPC analysis is interesting for samples with certain abnormal WBC populations, therefore it is triggered automatically as a reflex test after initial analysis in the CBC+DIFF profile, whenever the 'Blasts/Abn Lympho?' flag has been triggered.

Dual-level flagging system

Initial CBC+DIFF: highly **sensitive** flagging → trigger for reflex testing → Reflex CBC+DIFF+WPC: highly **sensitive and specific** flagging

Workflow impact

Depending on the patient collective that is usually analysed, smear review rates can be lowered significantly – without compromising the analyser's sensitivity [2]. This speeds up the laboratory workflow and follow-up of true-positive flagged samples – by focusing on specific cell types in smear reviews.

Technologies for the detection of pathological WBC

Fluorescence flow cytometry

The first stage of the reagent reaction depends specifically on the composition of the membrane lipids. Mature white blood cells have a membrane lipid composition different to immature or reactive cells, so they are affected to a greater extent, leaving the cells in a less native stage. This makes the membrane more permeable for the proprietary fluorescence marker that labels the cells in the second stage of the reaction. The signals corresponding to cell volume and fluorescence are therefore directly related to the functionality of the cells.
Due to their membrane lipid composition, immature cells such as blasts are not permeated very strongly by the lysis reagent. Consequently, they show relatively low fluorescence signals and high signals for cell volume because they remain mostly intact. Neoplastic lymphocytes are more mature and their membranes are more readily permeated, causing higher fluorescence signals and smaller volume signals due to cell shrinking. These differences allow a reliable identification of such malignant cells.

References

[1] Henriot I et al. (2017): *Int J Lab Hematol; 39 (1): 14.*
[2] Blomme S et al. (2021): *Int J Lab Hematol. 43 (2): 191–198.*

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ZE000414.EN.C.08/23