

## **OPTIMIZATION OF FLOW CYTOMETRIC MARKER EVALUATION IN HEMATOLOGICAL DISEASES**

The use of flow cytometric immunophenotyping plays an important role in the diagnosis, prognosis and monitoring of hematological diseases. Below is the summary of my flow cytometric marker evaluation. In case of paroxysmal nocturnal hemoglobinuria (PNH) the size of the PNH clone can better be assessed by analysis of leukocytes rather than of erythrocytes. The use of the monoclonal marker CD14 is advised in the detection of PNH clones, since this was found most sensitive. We recommend the use of a new parameter, the MFI rate in the results reporting process. By combining surface staining and a functional assay multidrug resistance (MDR) can be analyzed in different cell subpopulations e.g. T-, B-, or even in leukemic cells. The A subunit of blood coagulation factor XIII (FXIII-A) was utilized in acute myeloid leukemia (AML) subclassification and by adding a special washing step in the staining process platelet adhesion derived false positivity could be excluded in AML M7. In case of acute lymphoblastic leukemia (ALL) intracellular expression of FXIII-A was found by flow cytometry and verified by several techniques. The flow cytometric analysis of the prognostic factor Zap-70 needs standardization. The use of Zap-70 as an independent prognostic factor is not recommended. By monitoring a patient suffering from ALL, after a unique therapeutic intervention, the flow cytometric method was found to provide sensitive and significant information in the detection of minimal residual disease (MRD) along with the Q-PCR method.

*Key words:* flow cytometry, immunophenotype, acute lymphoblastic leukemia, acute myeloid leukemia, B-cell chronic lymphocytic leukemia, paroxysmal nocturnal hemoglobinuria, multidrug resistance, minimal residual disease, blood coagulation factor XIII subunit A