

INTRODUCTION

T-cell leukemia/lymphoma 1 (TCL1) is physiologically expressed in hematopoietic precursor B-cells and plasmacytoid dendritic cells (pDC). We validated this pattern via flow cytometry in normal bone marrow samples, confirming TCL1 positivity in both progenitor B-cells and pDCs. The purpose of our study is to evaluate the role of TCL1 expression in the diagnosis and reassessment of measurable residual disease (MRD).

RESULTS

We observed strong **BCL2 and TCL1 co-expression** in 16/20 **B-ALL cases** (image 1). In contrast, **TCL1 was rarely expressed in myeloid neoplasms or MDS** (5/140), while **BCL2 was highly expressed** in 120/140 of these cases.

Notably, all **BPDCN** cases (5/5) showed high and consistent **co-expression >90%** of TCL1 and BCL2 as a **descript cluster**, both at diagnosis and during therapy, supporting its utility as a marker for MRD (image 2). This was particularly valuable in three patients treated with anti-CD123 monoclonal antibody, where TCL1/BCL2 detection remained possible despite CD123 antigen attenuation.

Myeloid/monocytic neoplasms with expanded pDCs rarely expressed TCL1 (2/15), and **none co-expressed BCL2 and TCL1 as a descript cluster** (image 3).

Among **mature B-cell neoplasms**, **TCL1** was expressed in **chronic lymphocytic leukemia** (CLL, n=10) and in **normal naïve B-cells** and a **subset of IgM memory B-cells**. It was **absent in IgM-only memory B-cells** and in **other B-cell lymphomas after the germinal center stage**.

Table 1. *TCL1 and BCL2 co-expression*

Hematological Disease	Number of patients
B-ALL	20
AML	30
sAML	50
MDS	60
BPDCN	5
Myeloid/monocytic neoplasms with expanded pDCs	15
Low grade mature B cell neoplasms	30

Image 1.

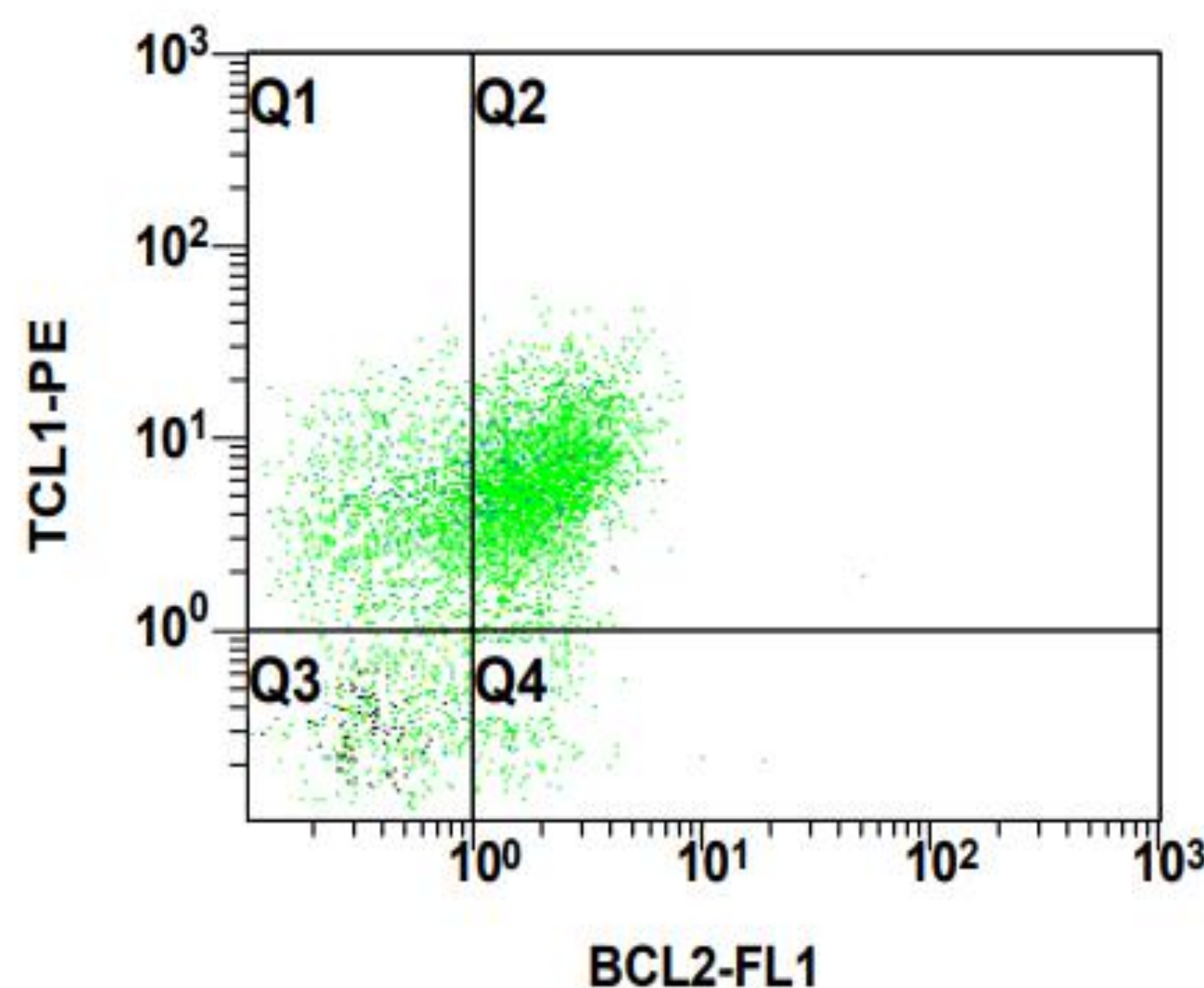


Image 2.

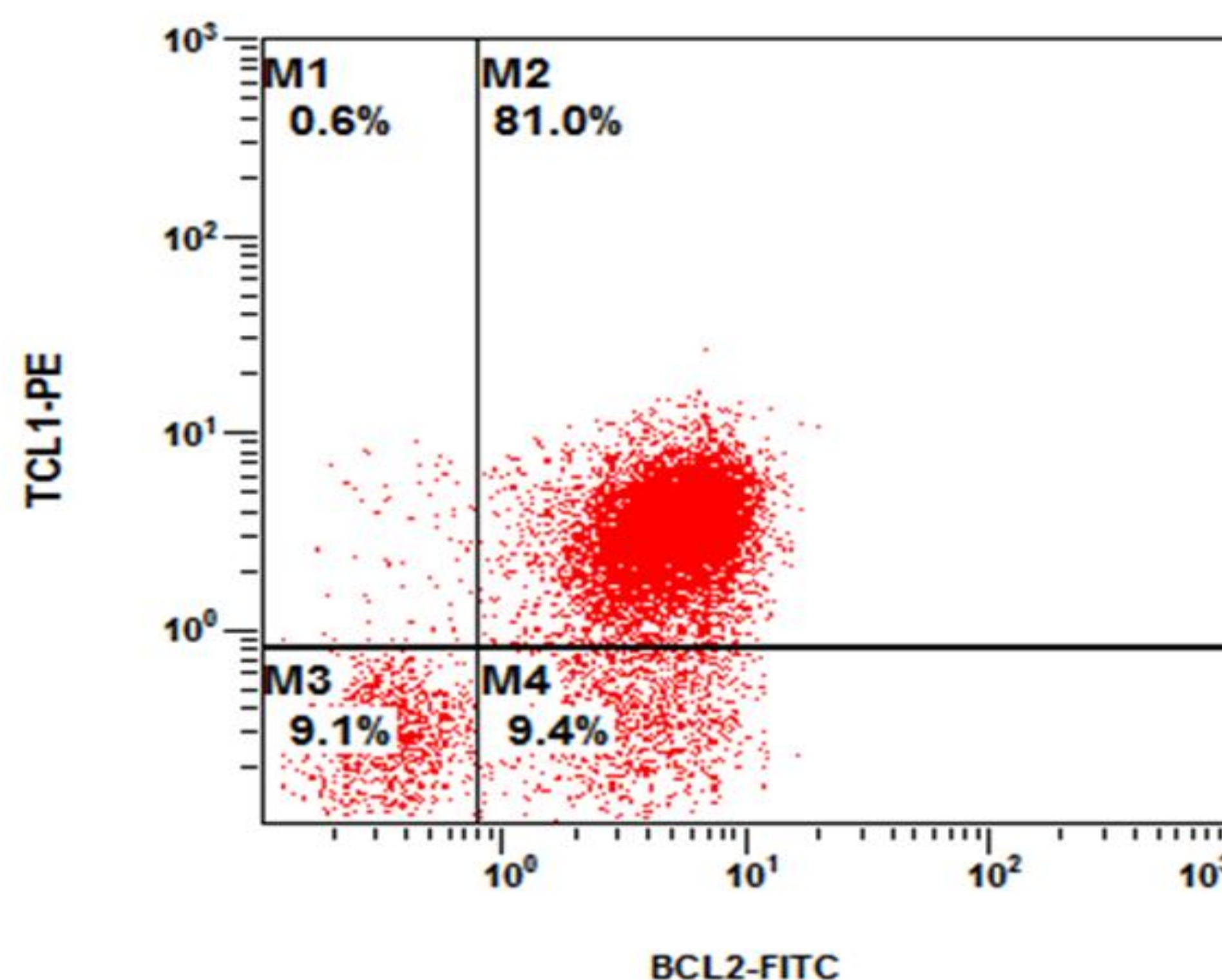
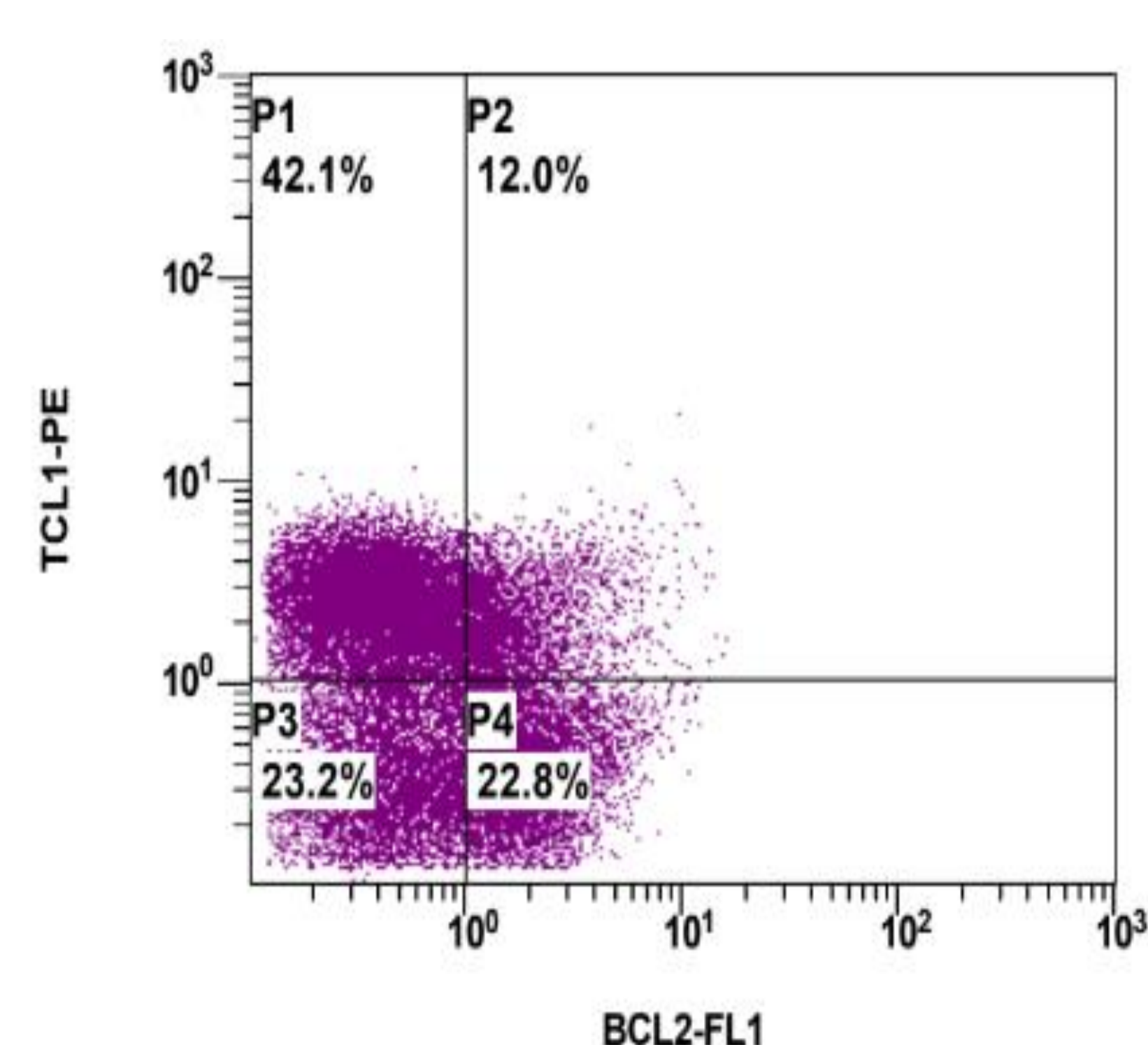


Image 3.



CONCLUSION

TCL1 is a valuable diagnostic marker in B-cell malignancies and a **distinguishing feature in BPDCN when co-expressed with BCL2**. Its consistent expression in **BPDCN** also makes it a **useful tool for MRD detection**, especially when traditional antigens are downregulated under therapeutic inhibition.

REFERENCES

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