



P2.181:Peripheral Blood T-Cell Kinetics in Non-Small-Cell Lung Cancer During Immune-Checkpoint Inhibitor Treatment

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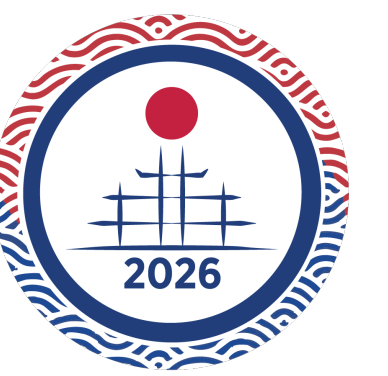
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INTRODUCTION

Non-small cell lung cancer (NSCLC) represents the majority of lung cancer cases and remains a leading cause of global cancer-related mortality despite advances in therapies such as immune checkpoint inhibitors(ICIs).

PD-L1 immunohistochemistry, the most widely used biomarker, has limitations due to spatial heterogeneity and dynamic regulation. Emerging evidence indicates that the phenotypic and functional states of T cells, both in circulation and within the tumor microenvironment, play a decisive role in determining the therapeutic response and resistance.

METHODS

NSCLC Patients undergoing chemo-immunotherapy

Total N = 42

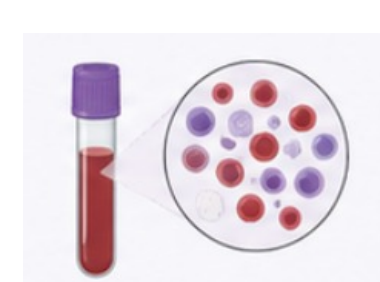


Neoadjuvant ICI

Metastatic disease ICI

N= 17

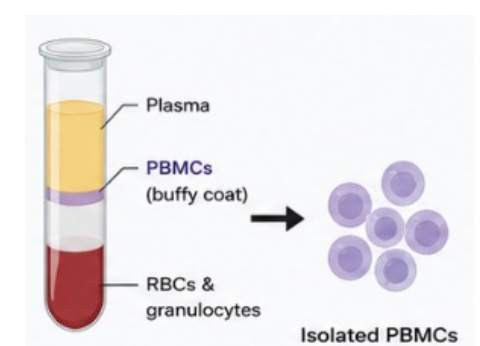
N= 25



Longitudinal
Peripheral Blood
Collection

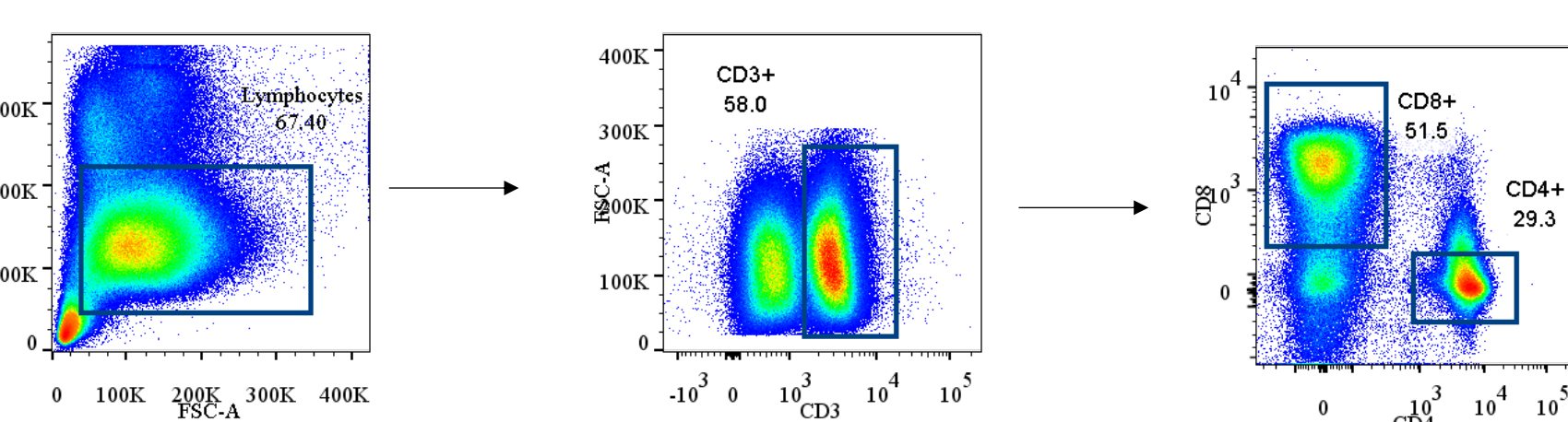
Pre-treatment
Week-0

Post-treatment
Week-3



PBMCs Isolated by
density-gradient
centrifugation

PBMCs stained with standardized
antibody panel



Patients were categorized as responders and non-responders based on pathological response in the neoadjuvant cohort and radiological response in the metastatic cohort, and comparative statistical analyses were conducted.

DISCUSSION AND CONCLUSION

An early proliferative burst of PD-1+ki-67+CD8+ T cells after 3 weeks of treatment with ICIs in peripheral blood can be a potential marker of immunotherapy response in NSCLC.

Future Direction for Research

This study highlights dynamic peripheral T-cell kinetics as a promising, minimally invasive approach for monitoring response to immune-checkpoint blockade. The early expansion of PD-1+Ki-67+CD8+ T cells in responders provides a potential dynamic biomarker that may enable earlier identification of treatment benefit than conventional response assessment. Future validation of these immune signatures could support personalized treatment decisions, improve patient selection, and advance blood-based precision immuno-oncology in NSCLC.

REFERENCES & ACKNOWLEDGEMENTS

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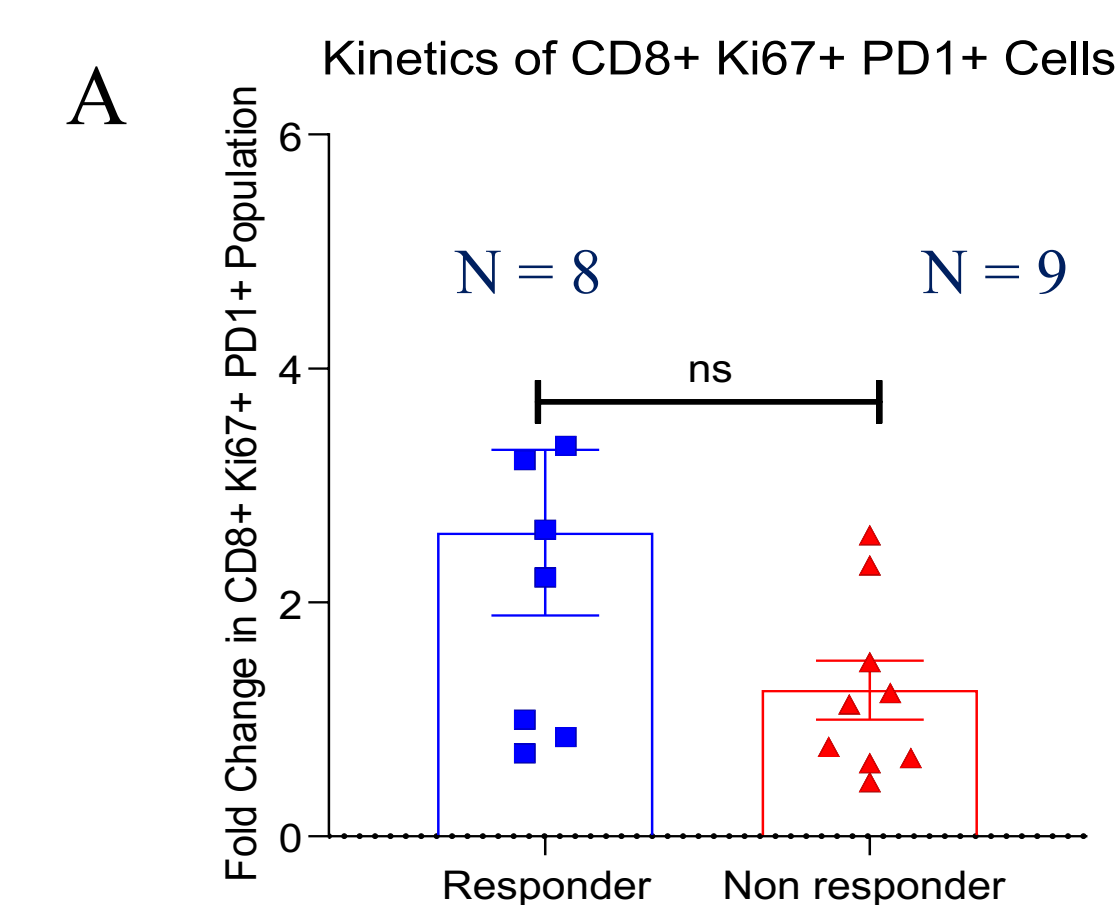


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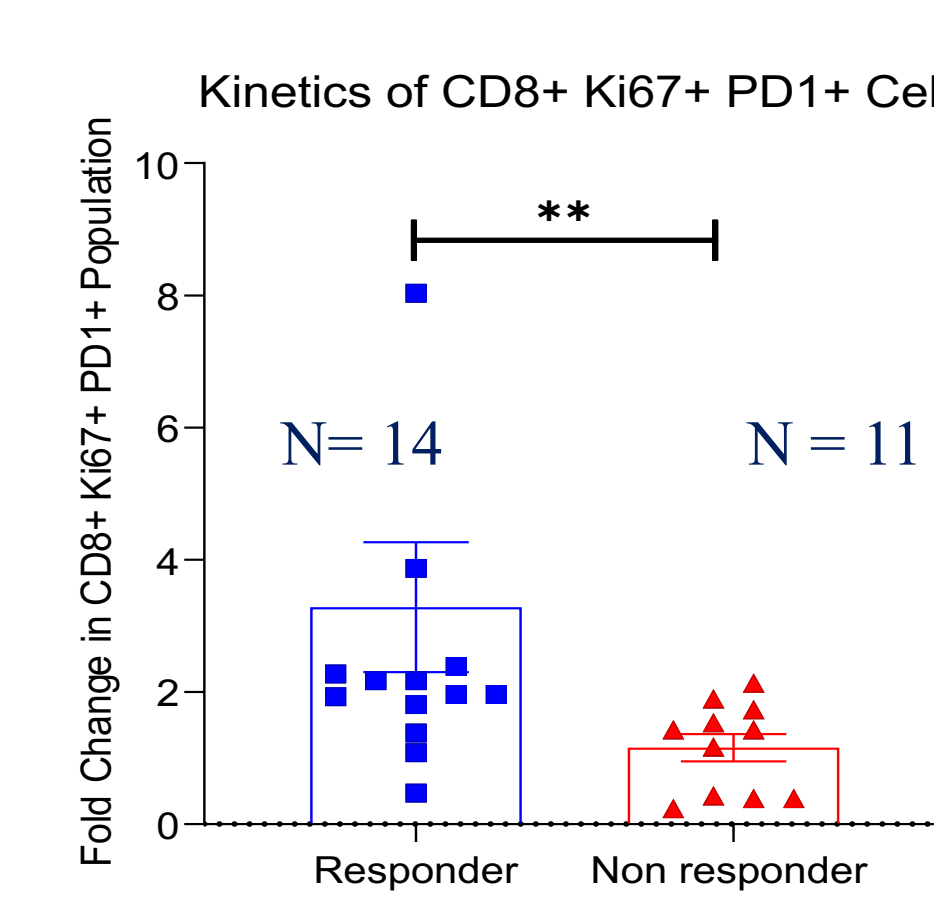
RESULTS

Longitudinal immune profiling of patients treated with chemo-immunotherapy revealed dynamic changes in the peripheral T-cell subsets. Out of 17 patients in the neoadjuvant cohort, 8 had a complete or major pathological response while 9 had residual disease. In the metastatic cohort, 14 patients had complete/ partial response or stable disease, while 11 had progressive disease as their best radiological response. Responders exhibited a significantly higher increase (fold change) in the proportion of PD-1+Ki-67+ CD8+ T cells at week 3 as compared to the non-responders, indicating an actively proliferating yet antigen-experienced T-cell population in peripheral blood is associated with an effective anti-tumor response. This difference was statistically significant in the metastatic cohort but not in the neoadjuvant cohort, potentially reflecting the smaller sample size of the cohort. These cells exhibited an effector T cell phenotype, characterized by high co-expression of HLA-DR and CD38 and high granzyme B expression.

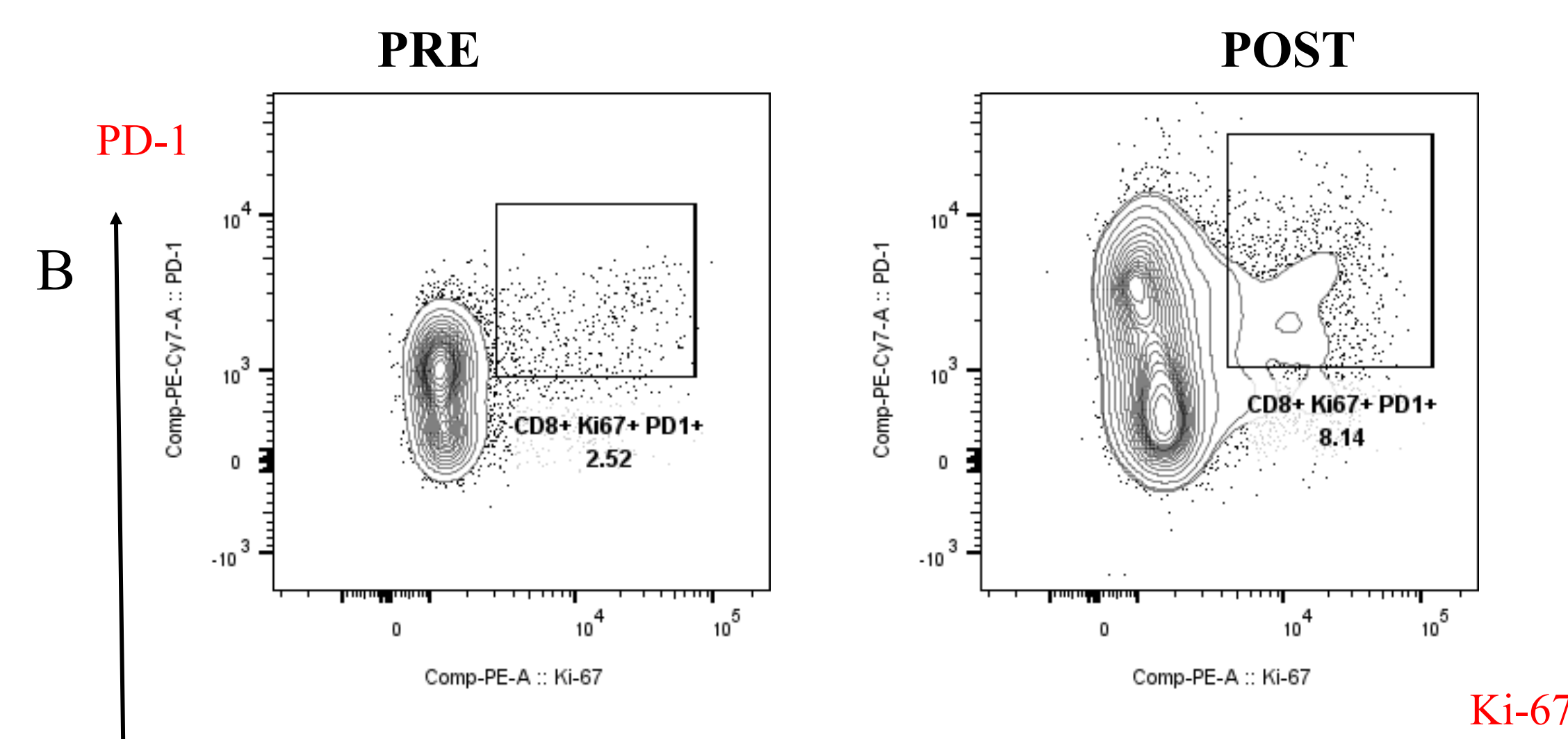
Neoadjuvant Cohort



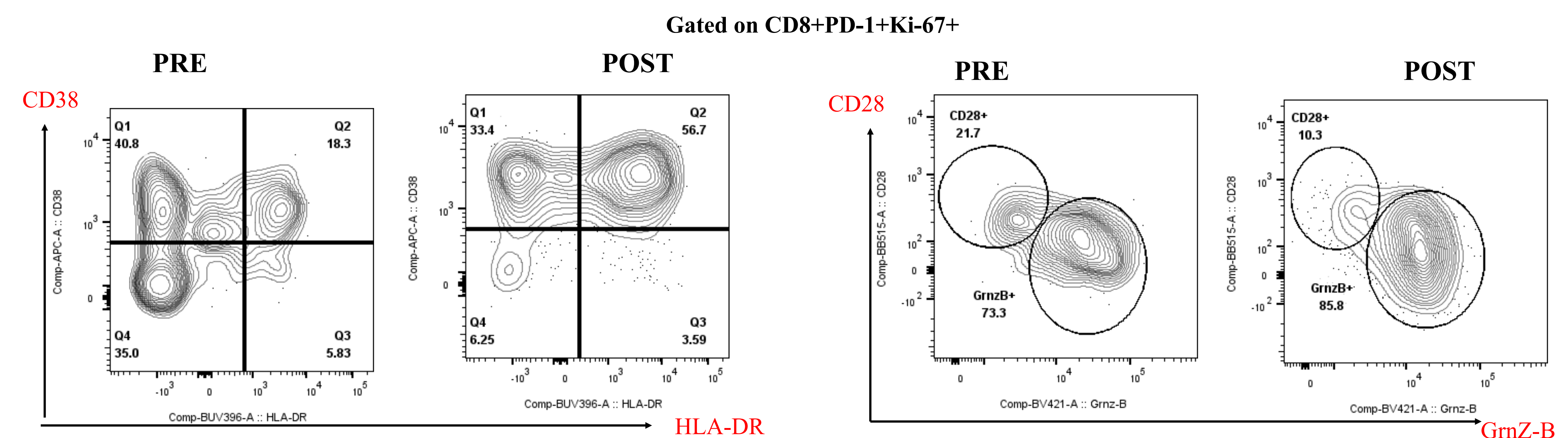
Metastatic Cohort



Fold change in PD-1+Ki-67+ CD8+ T-cells at 3 weeks in neoadjuvant and metastatic cohort, stratified by response status



Representative contour plots showing increased frequency of proliferating PD-1+ki-67+CD8+ T cells following treatment (Pre vs Post)



Proliferating PD-1+Ki-67+ CD8+ T cells display an activated phenotype chracterised by co-expression of CD38 and HLA-DR, alongwith Granzyme-B expression, indicating effector differentiation