

Biomarker Datasheet

Human CD4 U-VUE[®] Biomarker

CD4 is a member of the immunoglobulin superfamily and is part of the TCR/CD3 complex, binding to MHC class II molecules and participating in signal transduction through recruitment of tyrosine kinase Lck. CD4 expression is used to identify helper T cells of which there are many different subsets including Th1, Th2, Th9, Th17, regulatory T cell, and follicular helper T cell. Each of these contributes to immune function through their unique cytokine profile.

Overview

Target	Other names	Isotype	Primary cell type	Subcellular location	Positive control(s)
CD4	T-cell surface antigen T4	Rabbit IgG	T helper cells	Plasma membrane	Tonsil/ Spleen

*Clone available upon request

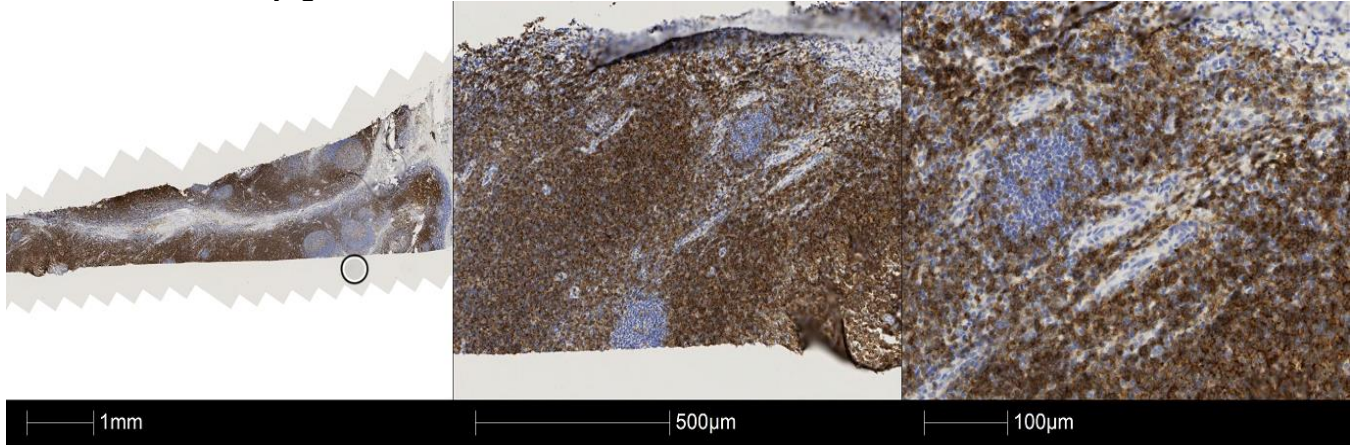
Quality Control

Each lot of antibody conjugate reagent is tested on positive control tissue and reviewed by reviewed by Ultivue's pathologists and scientists to ensure appropriate staining pattern and signal intensity by both qualitative and quantitative review.

Predicate Comparison

Serial sections of tonsil and tumor tissue controls were stained with traditional chromogenic DAB using unconjugated antibodies and with the InSituPlex® (ISP) monoplex assay to demonstrate concordance between staining modalities.

CD4 Tonsil unconjugated DAB



CD4 Tonsil ISP

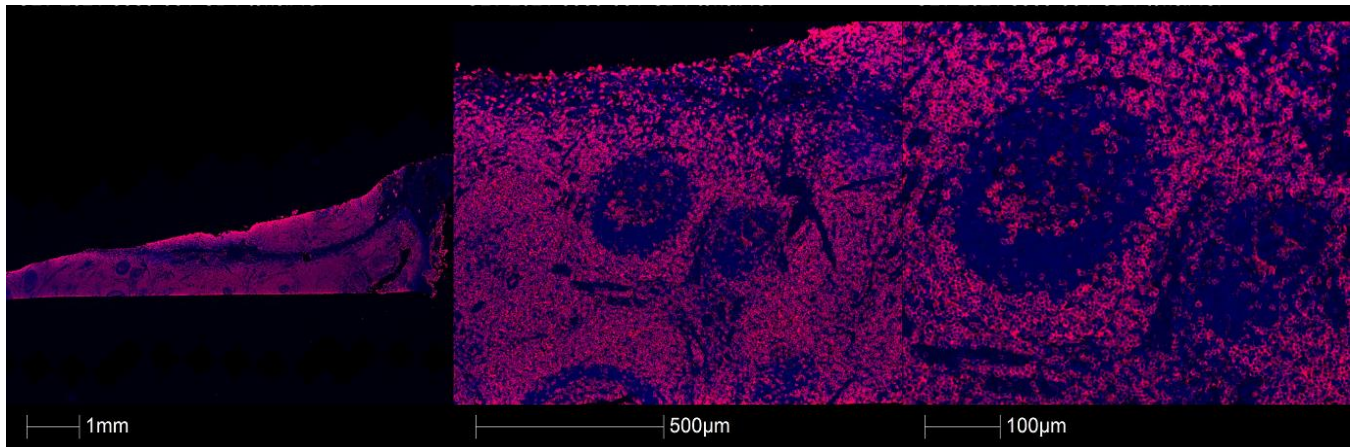


Figure 1: Comparison of unconjugated DAB and InSituPlex® monoplex assay in tonsil tissue. Chromogenic DAB (top panel), fluorescent ISP staining (bottom panel).

Assay Reproducibility

An InSituPlex® monoplex assay was performed across serial sections of tonsil and non-small cell lung carcinoma (NSCLC) tissue on the Leica BOND RX autostainer. Staining was found to be qualitatively and quantitatively equivalent across all slides in the run as demonstrated by coefficient of variance (CV) of positive cell density and signal intensity.

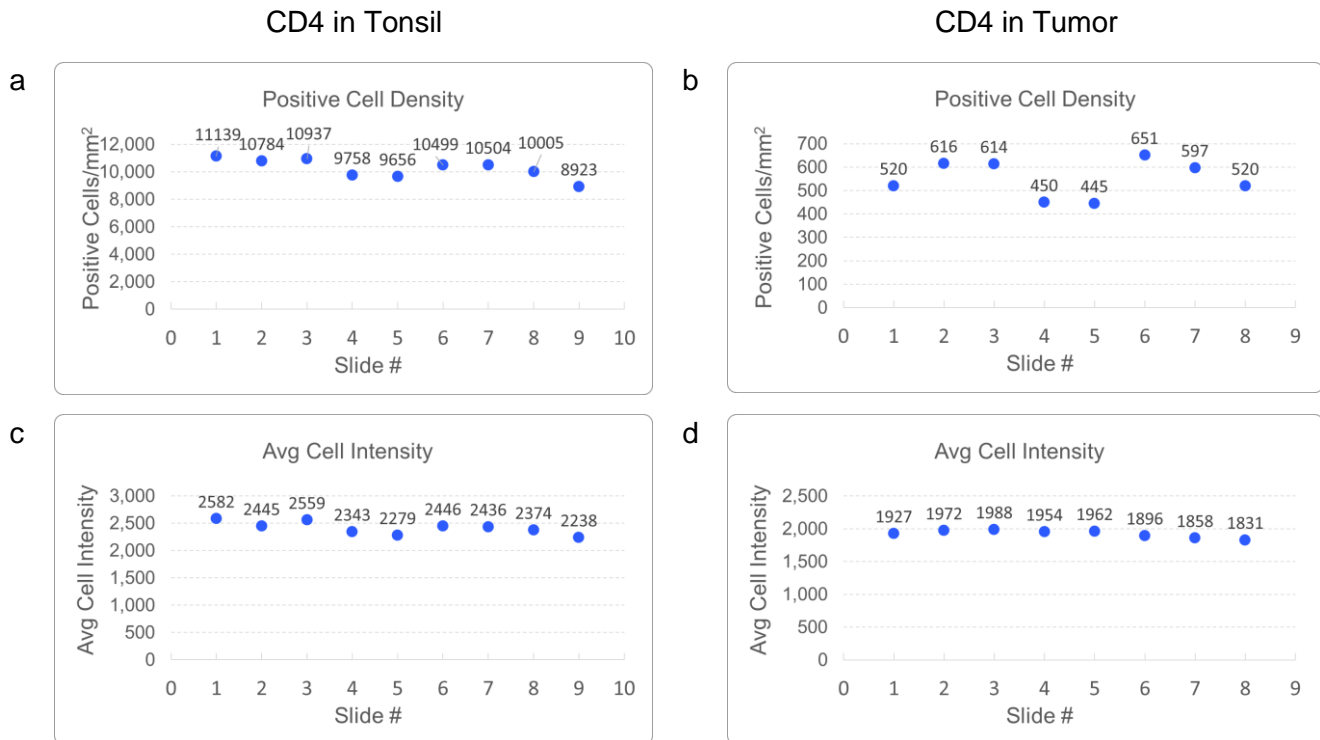


Figure 2: **a.** Number of positive cells/mm² per slide on tonsil tissue. Inter-slide coefficient of variance (CV) =6.6% **b.** Number of positive cells/mm² per slide on NSCLC tissue. Inter-slide CV = 13.4% **c.** Mean positive signal intensity per slide on tonsil tissue. Inter-slide CV = 4.5%. **d.** Mean positive signal intensity per slide on NSCLC tissue. Inter-slide CV = 2.8%.

References

1. Miggelbrink, A. M., Jackson, J. D., Lorrey, S. J., Srinivasan, E. S., Waibl-Polania, J., Wilkinson, D. S., & Fecci, P. E. (2021). CD4 T-Cell Exhaustion: Does It Exist and What Are Its Roles in Cancer?. *Clinical cancer research : an official journal of the American Association for Cancer Research*, 27(21), 5742–5752. <https://doi.org/10.1158/1078-0432.CCR-21-0206>
2. Tay, R. E., Richardson, E. K., & Toh, H. C. (2020). Revisiting the role of CD4+ T cells in cancer immunotherapy—new insights into old paradigms. *Cancer Gene Therapy*, 28(1–2), 5–17. <https://doi.org/10.1038/s41417-020-0183-x>
3. Zuazo, M., Arasanz, H., Bocanegra, A., Fernandez, G., Chocarro, L., Vera, R., Kochan, G., & Escors, D. (2020). Systemic CD4 Immunity as a Key Contributor to PD-L1/PD-1 Blockade Immunotherapy Efficacy. *Frontiers in immunology*, 11, 586907. <https://doi.org/10.3389/fimmu.2020.586907>