#1182 PDC*lung01: An innovative therapeutic cancer vaccine induces specific immune responses in combination with anti-PD-1 treatment in patients with non-small cell lung cancer

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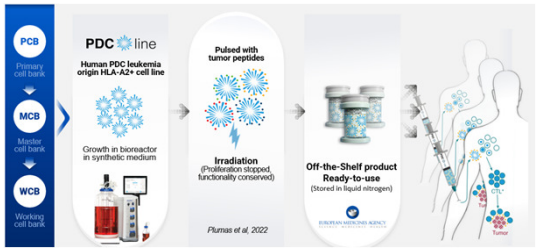
PDC*lung01
Off-the-shelf plasmacytoid dendritic cell-based product

- PDC*lung01 (IMP) is a therapeutic cancer vaccine based on an irradiated plasmacytoid dendritic cell line loaded with HLA-A*02:01-restricted peptides (NY-ESO-1, MAGE-A3, MAGE-A4, Multi-MAGE-A, MUC1, Survivin and Melan-A) able to prime and expand peptide-specific CD8+ T cells *in vitro* and *in vivo*. PDC*lung01 was shown to expand antitumor CD8+ T-cells from PBMC of patients with melanoma or NSCLC and to be synergistic with anti-Programmed Cell Death (PD)-1 (Pembrolizumab®; Charles, OncoImmunol 2020; Lenogue, Vaccines 2021; Hannani, Int. J. Mol. Sci. 2023).

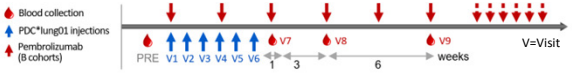


PDC-LUNG-101 study design

	Cohort	Arm	# of patients	NSCLC Patient Criteria	Main Objectives
Phase I	PDC*lung01 Mono — A1 Low dose	2M cells/peptide	6	• Stage IIa/IIb/IIIa after R0 resection • Adjuvant chemotherapy +/- radiotherapy	• Safety & tolerability • Immune activity
	PDC*lung01 Mono — A2 High dose	20M cells/peptide	10		
Phase II	Anti-PD-1 + PDC*lung01 — B1 Low dose	2M cells/peptide + anti-PD-1	6	• Stage IV starting anti-PD-1 as first-line (TPS≥50%)	• Dose range • Clinical activity: - Overall Response Rate (ORR) - Median Progression Free Survival (mPFS) - Disease Control Rate (DCR)
	Anti-PD-1 + PDC*lung01 — B2 High dose	20M cells/peptide + anti-PD-1	45		

PDC*lung01 administration schedule: IV+SC every week X 6 times

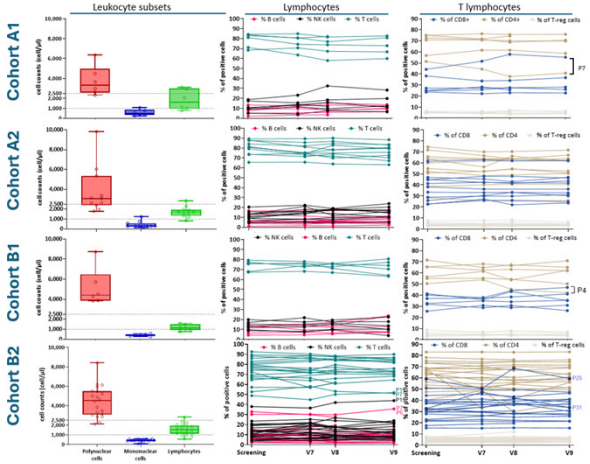
Anti-PD-1 administration schedule: IV, every 3 weeks (until progression)



Immunomonitoring assays

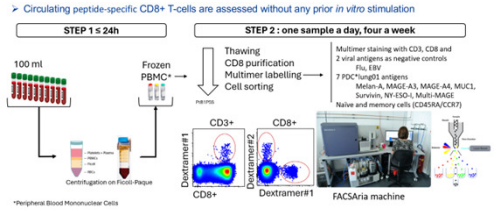
- Several immune parameters were monitored in the bloodstream at different times before and after vaccination using assays developed by the sponsor: leukocyte count and determination of peptide-specific CD8+ T cells for which a limit of quantification (LOQ) was defined to better assess changes in cell expansion: 0.005% for Melan-A, MAGE-A3 and Survivin, and 0.003% for other specificities.
- The results of immune assessment of Cohorts A1, A2, B1 and B2 (n=19 patients) are presented here.

Kinetics of circulating leukocyte subsets

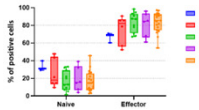


- Lymphocytes, polynuclear and mononuclear cell concentrations at Screening (left), and kinetics of % of circulating NK, B, T (middle) and CD8+, CD4+ and T-reg (right) at Screening, V7, V8 and V9.

Overview of the immunomonitoring workflow



Naïve and Memory circulating CD8+ T-cells

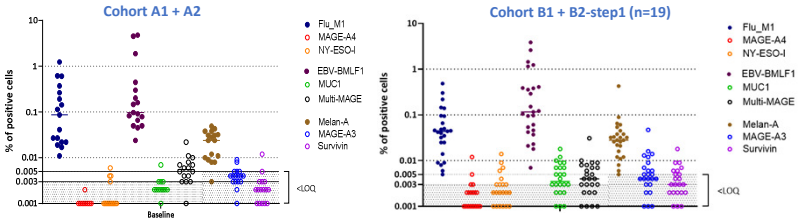


- At baseline, patients from all cohorts displayed less naïve cells and a more heterogenous cell pattern than healthy donors (HD). Naïve cells are defined as CD45RA+CCR7+ cells and Effector cells comprised Central Memory, Effector Memory and Terminally-differentiated Effector Memory cells.

>>> Conclusion <<<

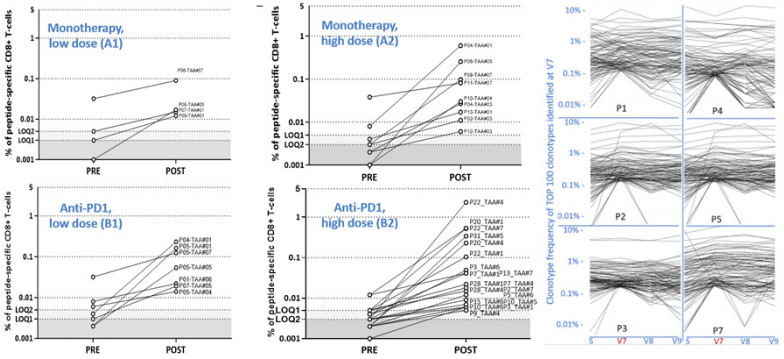
PDC*lung01 is biologically active to induce an antitumor immune response in a significant number of patients, synergistic with pembrolizumab and associated with clinical responses.

Basal frequencies of circulating antigen-specific CD8+ T-cells



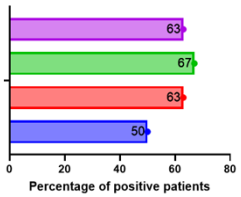
- The basal frequencies of antigen-specific CD8+ T-cells for Cohorts A (left) and B (right) were similar. The proportions of T-cells specific for targeted tumor antigens were generally under the Limit of Quantification (LOQ, grey zone). By contrast, control viral antigen-specific T-cells (EBV or Flu) were well detected.

Expansion of circulating tumor antigen-specific CD8+ T-cells following PDC*lung01 treatment



- Left, middle: Frequencies of circulating antigen-specific CD8+ T-cells, pre and post treatment with PDC*lung01
- Right: Frequencies of Top100 clonotypes identified at V7 in CD8+ T-cells at all timepoints. (P: Patient)

Positive patients and correlation with clinical activity



- A1 cohort
- A2 cohort
- B1 cohort
- B2 cohort/Step1

Cohorts		Partial Response	Stable Disease
patients with expansion of antigen-specific T-cells	B1 Low dose (n=6)	3/4	1/1
	B2 High dose (n=19)	6/12	6/7

- A patient was considered positive when the percentage of circulating CD8+ T cells specific for any of the PDC*lung01 peptides increased twofold between baseline and V7, V8 or V9.

Protocol Nb: PDC-LUNG-101, Status: Recruitment completed, Clinical Trial Identification: NCT03970746; Acknowledgements: This study is sponsored by PDC*line Pharma SAS. Contact info: j.plumas@pdc-line-pharma.com