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► **To cite this version:**

Mathilde Dacos, Guillaume Sicard, Dorian Protzenko, Sarah Giacometti, Joseph Ciccolini, et al.. Nanoliposomes harness tumor immunity in breast cancer model. Séminaire Annuel du Cancéropôle PACA, Jul 2023, Fréjus St Raphael, France. hal-04356150

HAL Id: hal-04356150

<https://hal.science/hal-04356150>

Submitted on 20 Dec 2023

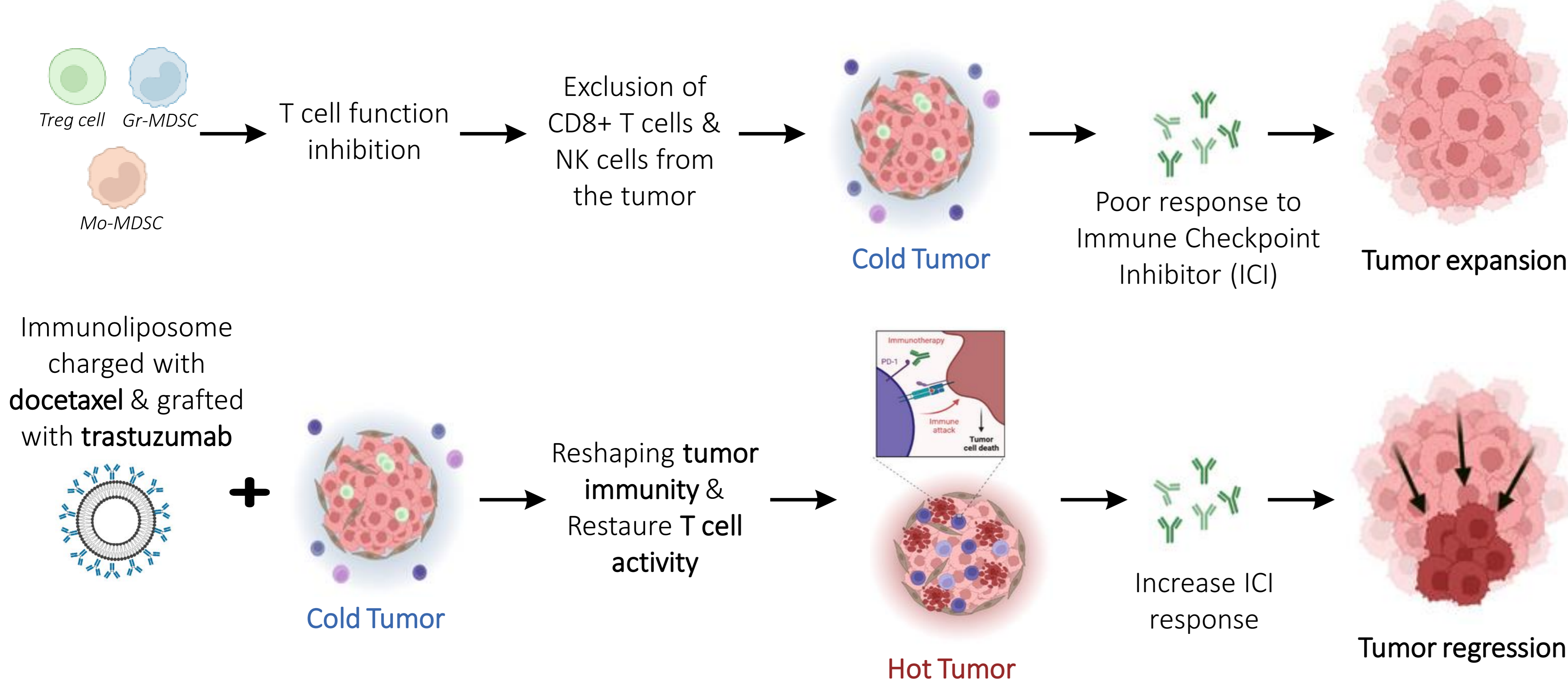
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Nanoliposomes harness tumor immunity in breast cancer model

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INTRODUCTION



OBJECTIVES

This proof-of-concept study aimed at:

- Monitor the impact of lipidic nanoparticles on immune cells in immuno-competent mice bearing murine breast cancer.
- Identify the time-window during which immunomodulation is maximal.
- Compare single dose and multiple dose scheduling with nanoparticles.

MATERIAL & METHODS

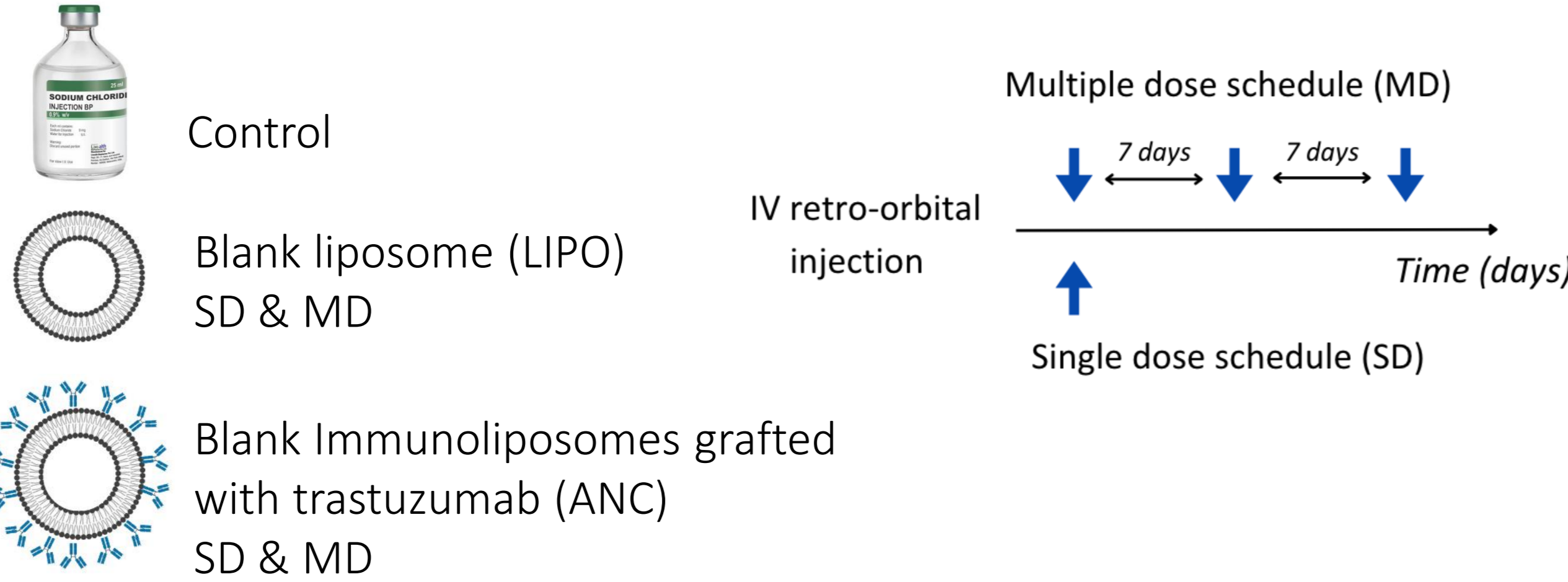
Mice

BALB/c mice grafted with 4T1 breast cancer cells

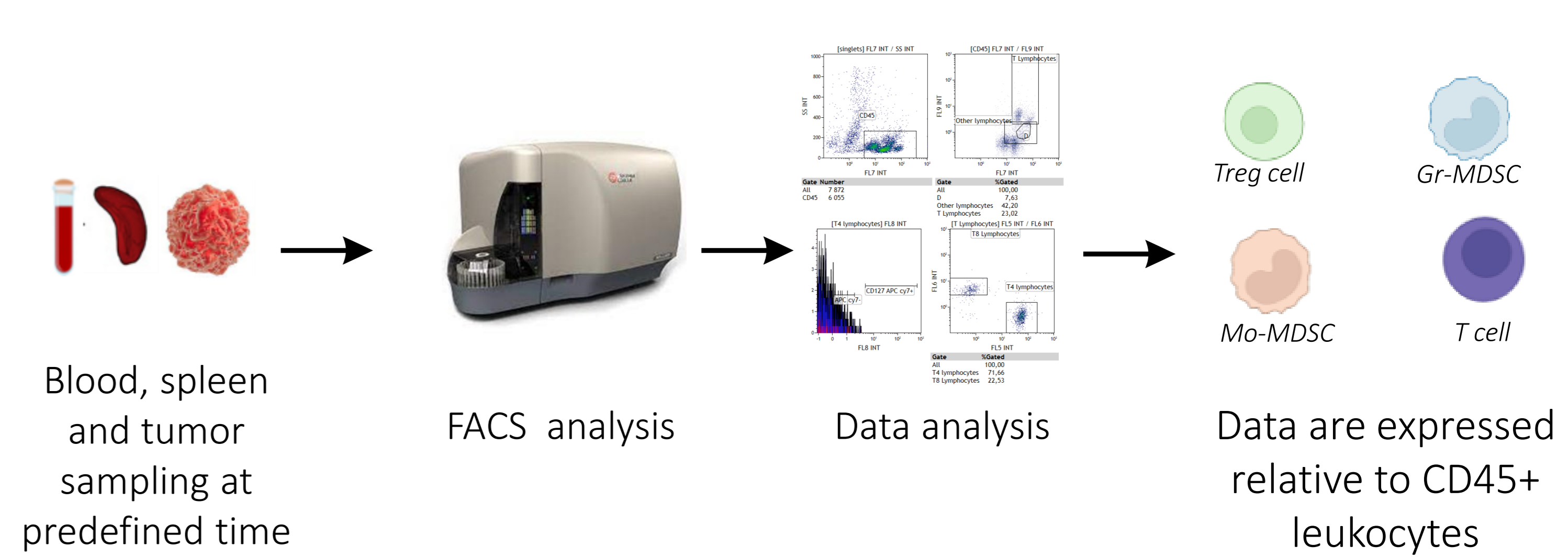


Treatments

5 groups, treatment once (single dose schedule SD) or every week (multiple dose schedule MD) over 3 weeks by IV retro-orbital injection

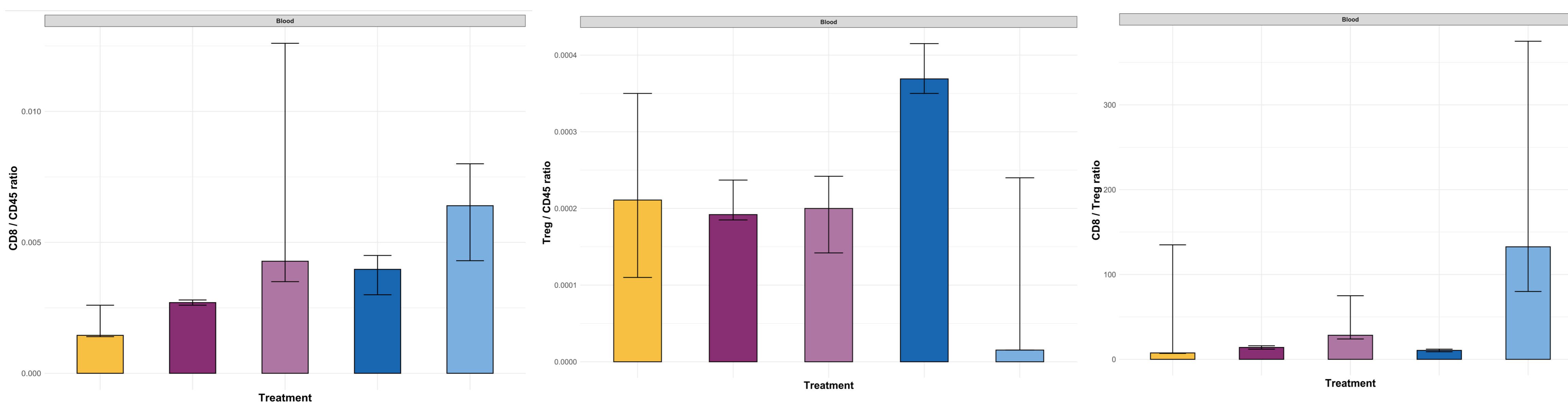


Immunomonitoring study



RESULTS

D7

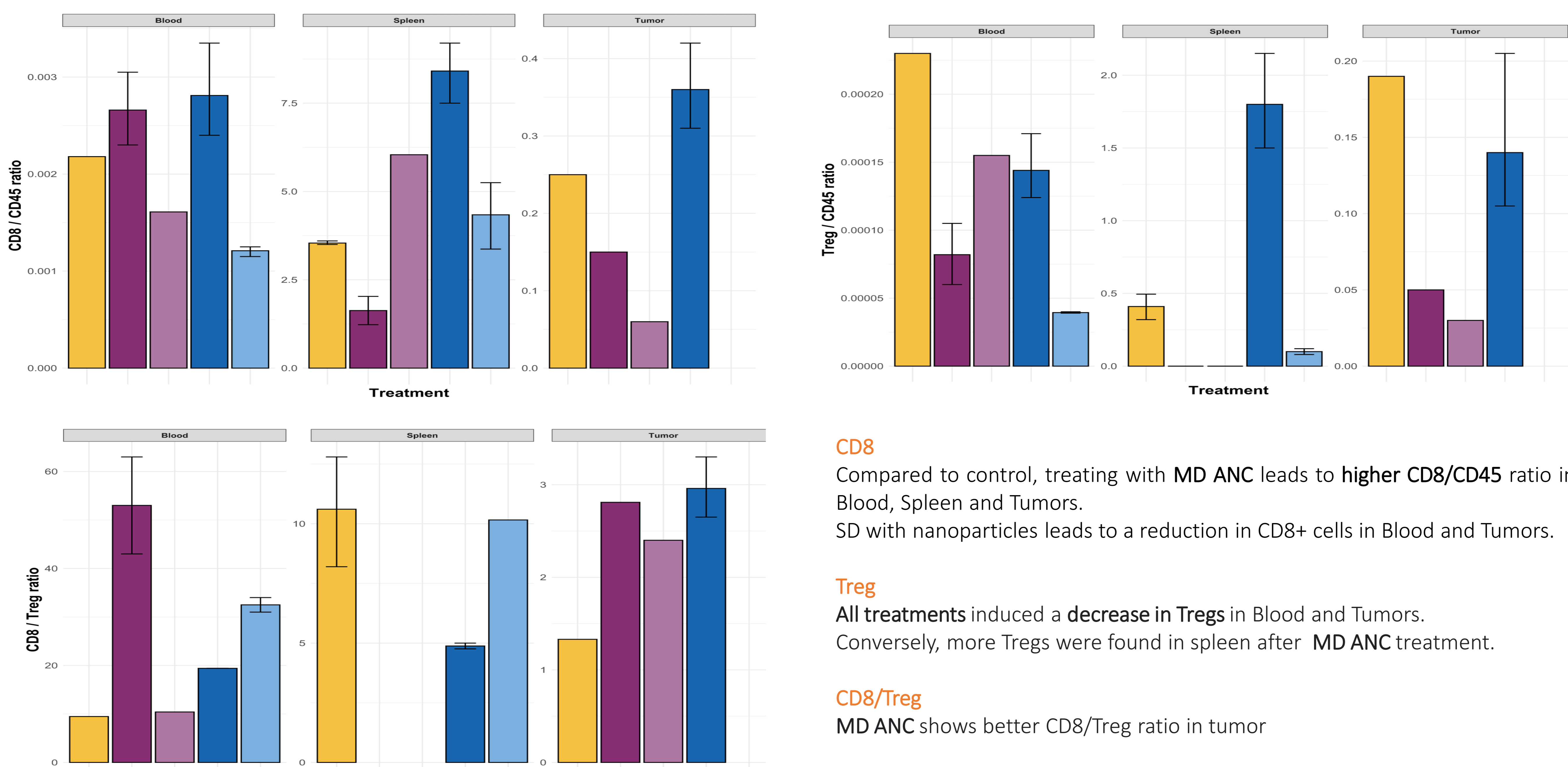


MD ANC
SD ANC
CTL
MD blank liposome
SD blank liposome

No clear impact of the nanoparticles was observed from D-1 to D-18.

On Day-7, SD ANC showed markedly lower Treg/CD45 ratio and higher CD8/Treg ratio

D18



CD8

Compared to control, treating with MD ANC leads to higher CD8/CD45 ratio in Blood, Spleen and Tumors. SD with nanoparticles leads to a reduction in CD8+ cells in Blood and Tumors.

Treg

All treatments induced a decrease in Tregs in Blood and Tumors. Conversely, more Tregs were found in spleen after MD ANC treatment.

CD8/Treg

MD ANC shows better CD8/Treg ratio in tumor

DISCUSSION

- Small size of the groups prevented statistical tests to be ran.
- However:
 - ✓ No difference was found in GrMDSCs and MoMDSCs between treatment vs. control (data not shown).
 - ✓ After two-weeks of treatment, MD ANC showed immunomodulating optimal features (i.e., higher CD8+ cells and reduction in Tregs).
 - ✓ Single Dosing is not sufficient to trigger increase in CD8+ cells in tumors.
- Sequencing treatments with immunotherapy (i.e., 2-week delay after nanoparticles) could be the best strategy to achieve synergism.

PERSPECTIVES

- Preliminary results suggest that tumor immunity could be reshaped with nanoparticles.
- Impact of MD ANC loaded with docetaxel is currently ongoing.
- Efficacy study with combined immune checkpoint inhibitor is ongoing.

