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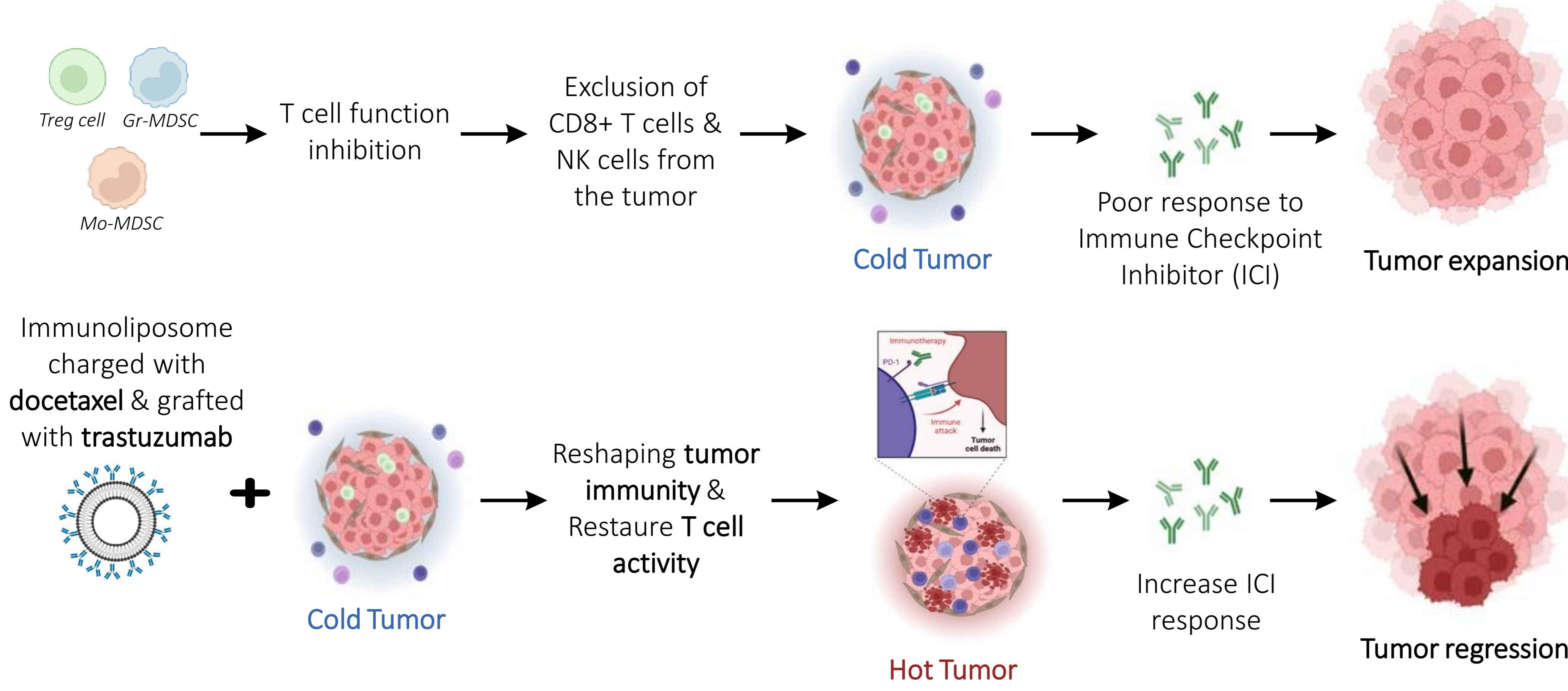
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# Nanoliposomes harness tumor immunity in breast cancer model

Mathilde Dacos, Guillaume Sicard, Dorian Protzenko, Sarah Giacometti, Joseph Ciccolini, Raphaëlle Fanciullino  
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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

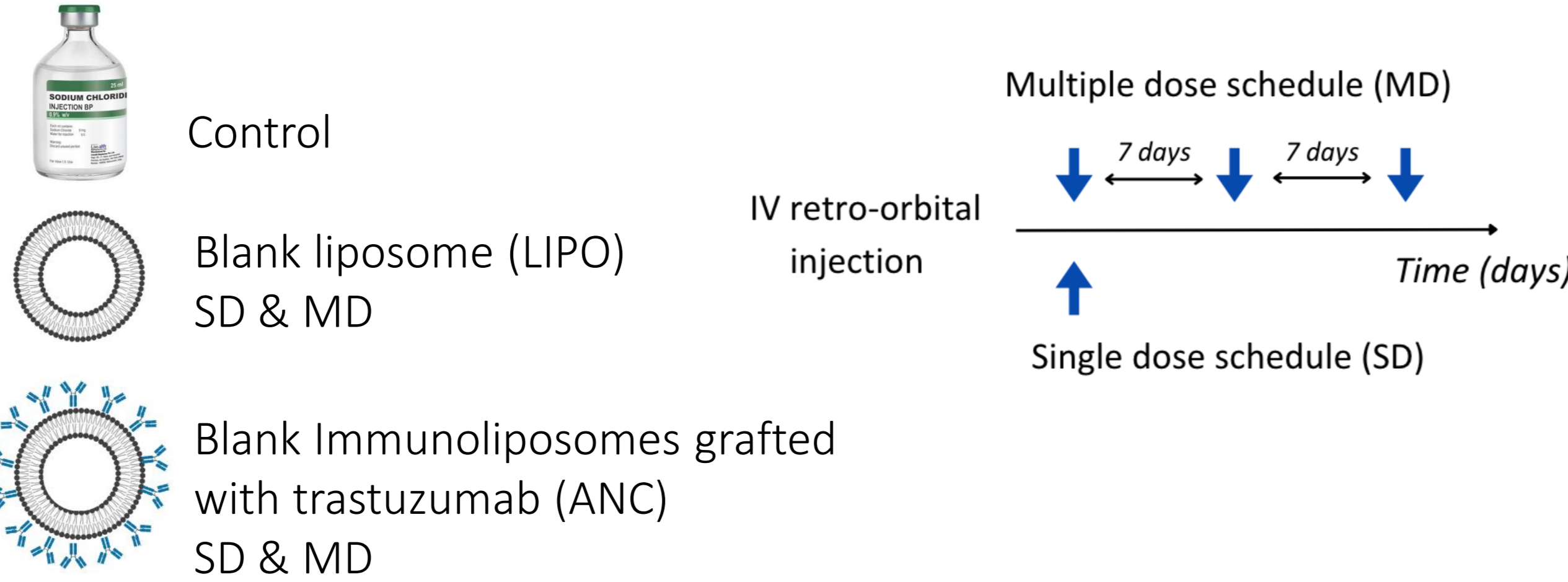
### Mice

BALB/c mice grafted with 4T1 breast cancer cells

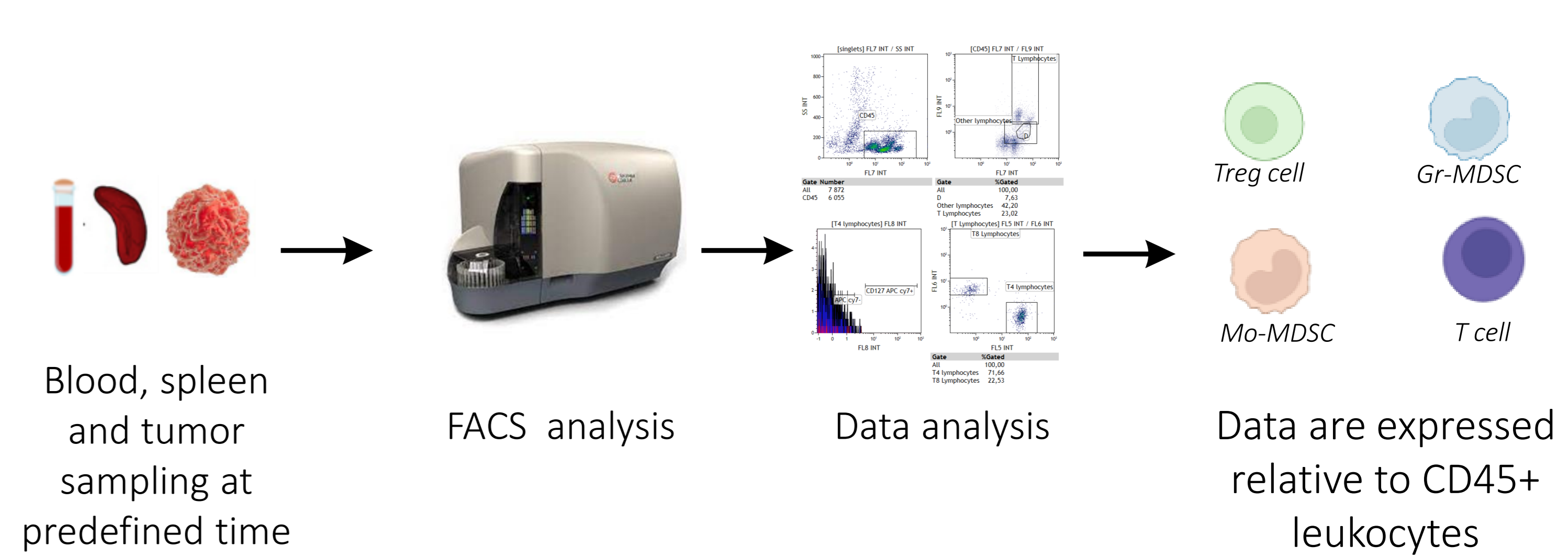


### Treatments

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

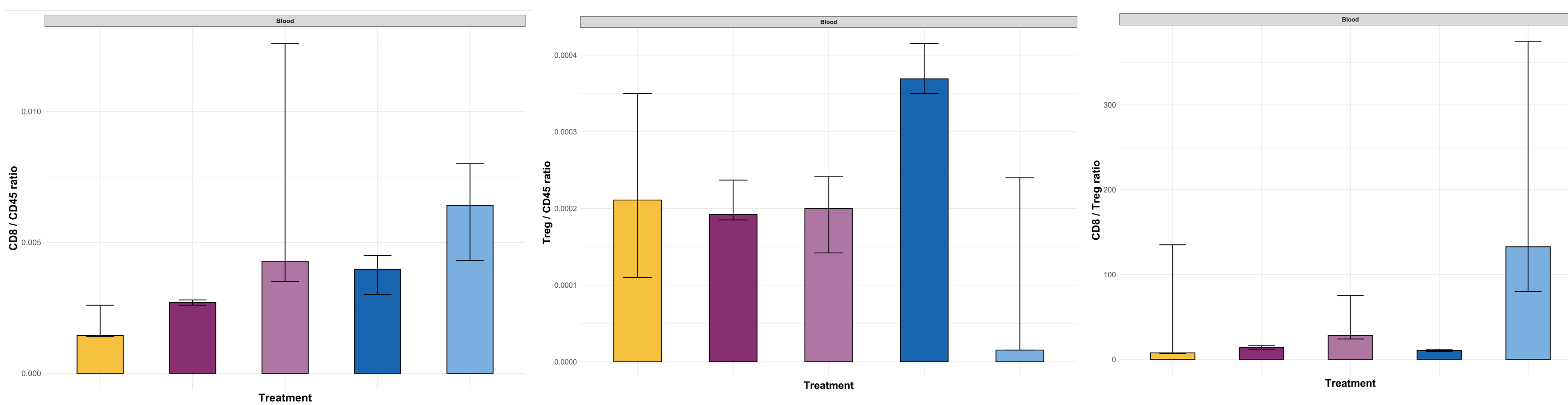


### Immunomonitoring study



## RESULTS

D7

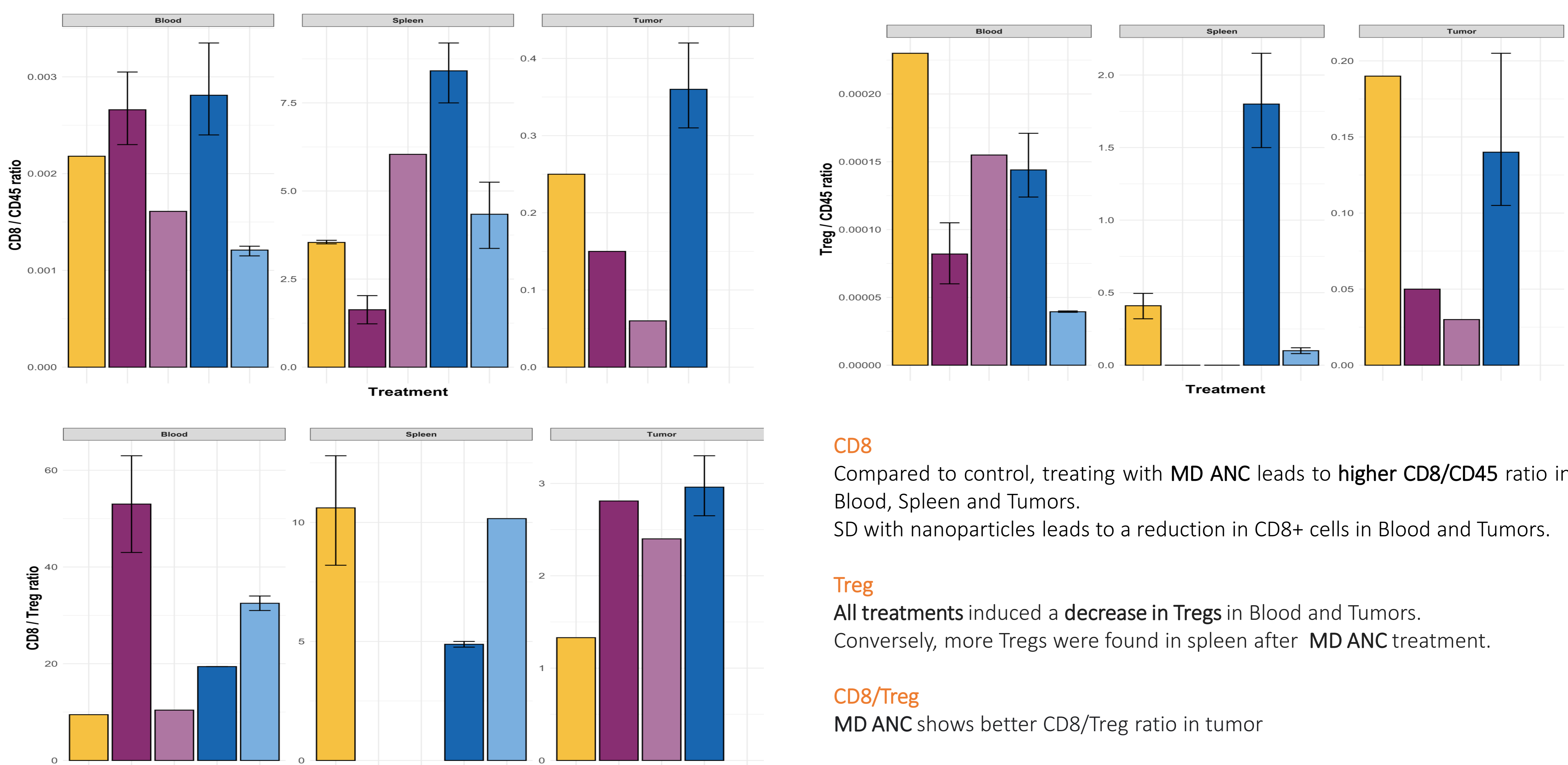


MD ANC  
SD ANC  
CTL  
MD blank liposome  
SD blank liposome

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.

