

Effect of *Saccharomyces boulardii* strain CNCM I-745 on DCs populations in the lamina propria of mice following *Salmonella typhimurium* infection.

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INTRODUCTION:

- At least, two DCs populations the migratory DC (referred as CD103⁺CD11b⁺DCs) and the non-migratory DC (referred as CD103⁻CD11b⁺DCs) are implicated in the innate immune response during infection of streptomycin-pretreated mice with *Salmonella typhimurium* (ST) (Bugarovic M et al. Immunity 2009) .

METHOD & RESULTS *IN VIVO*

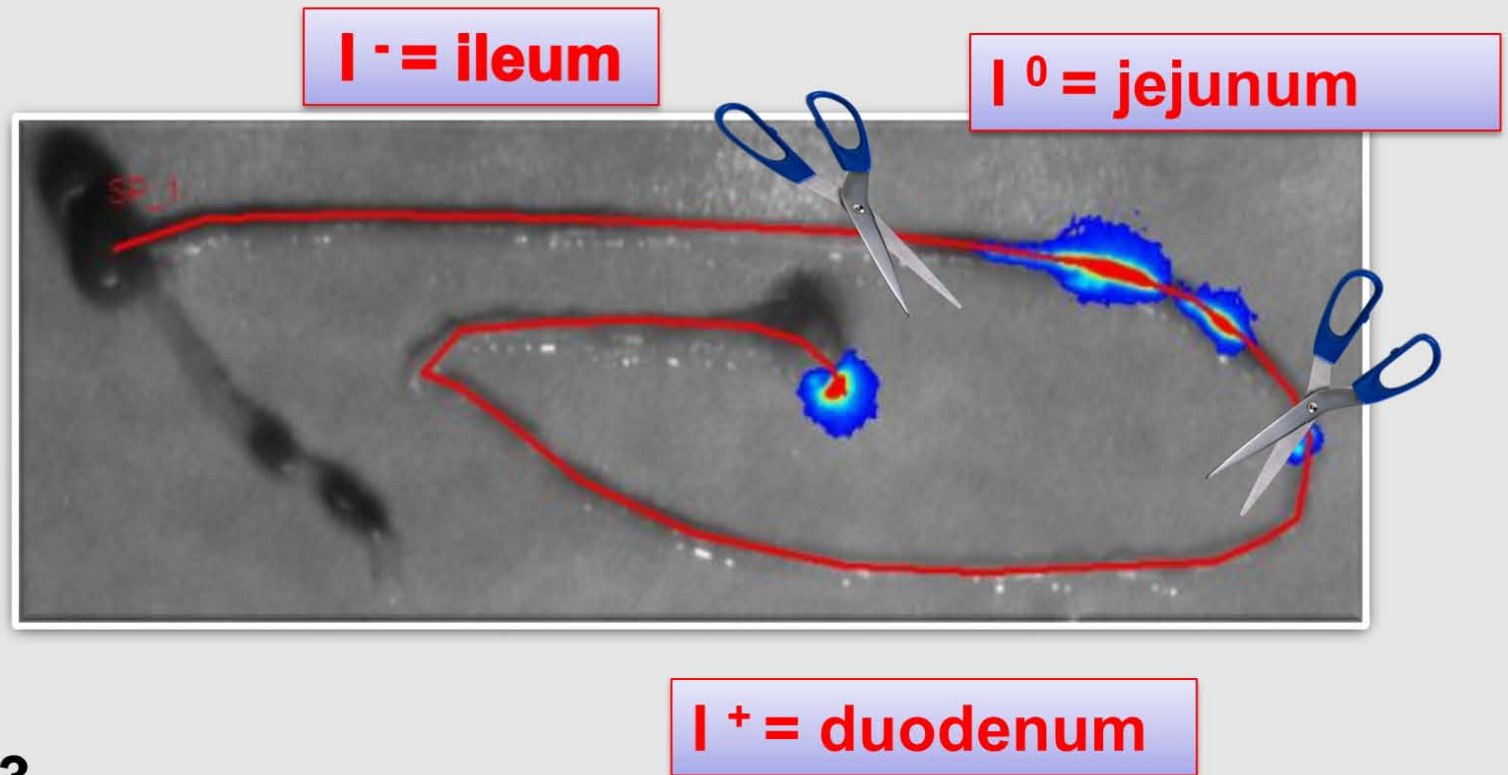
Step 1.

Streptomycin pretreated mice were orally infected with Luminescent *Salmonella* Typhimurium SL1344 (ST-*lux*) alone or in the presence of *S.b*. Photonic emission was followed in the GT using Biospace Imaging system (Biospace lab, France).

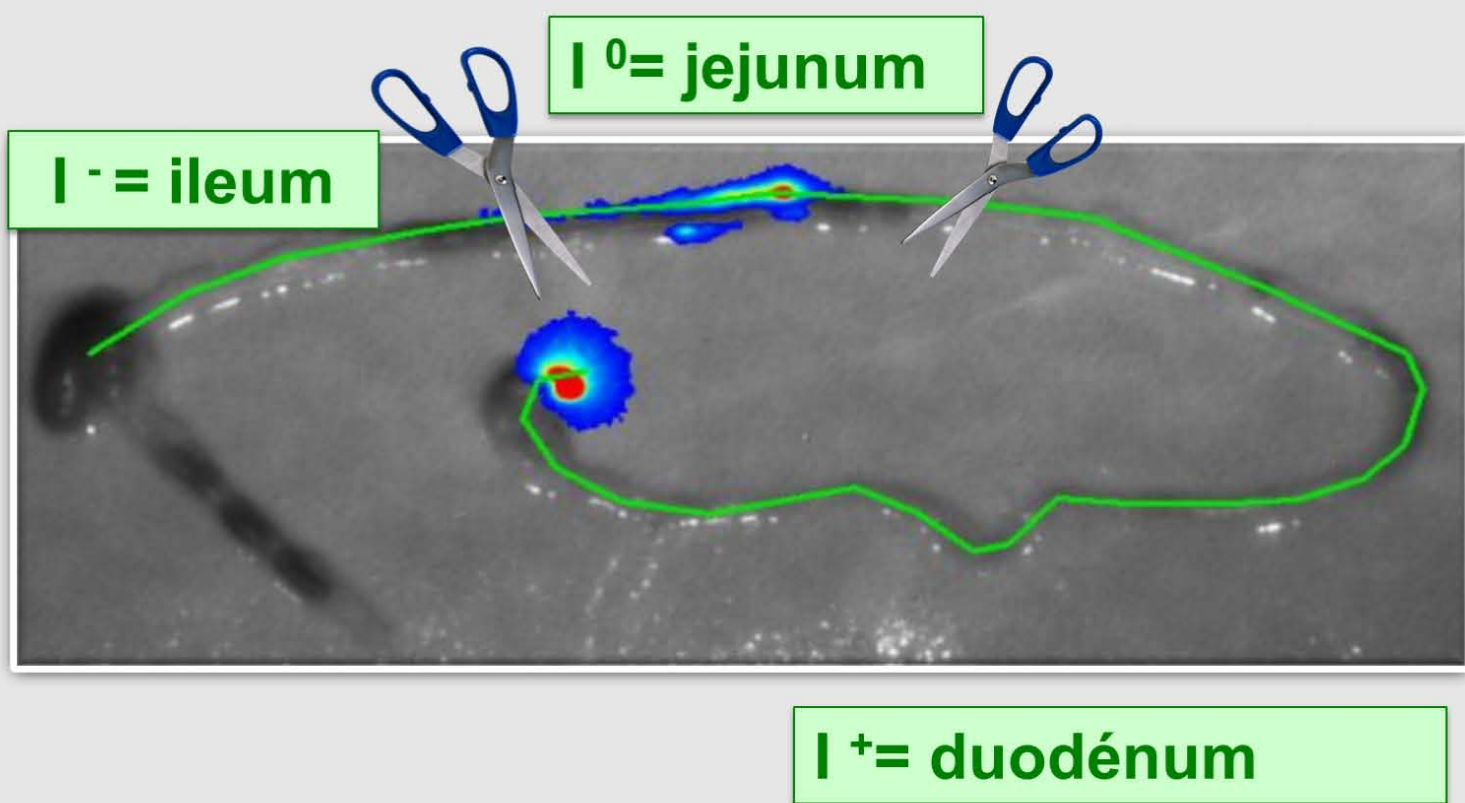
Step 2.

ST-*lux* localization in the intestinal tract extracted 45 min PI from mice:

Infected with ST-*lux* alone



Given *S.b* and infected with ST-*lux*

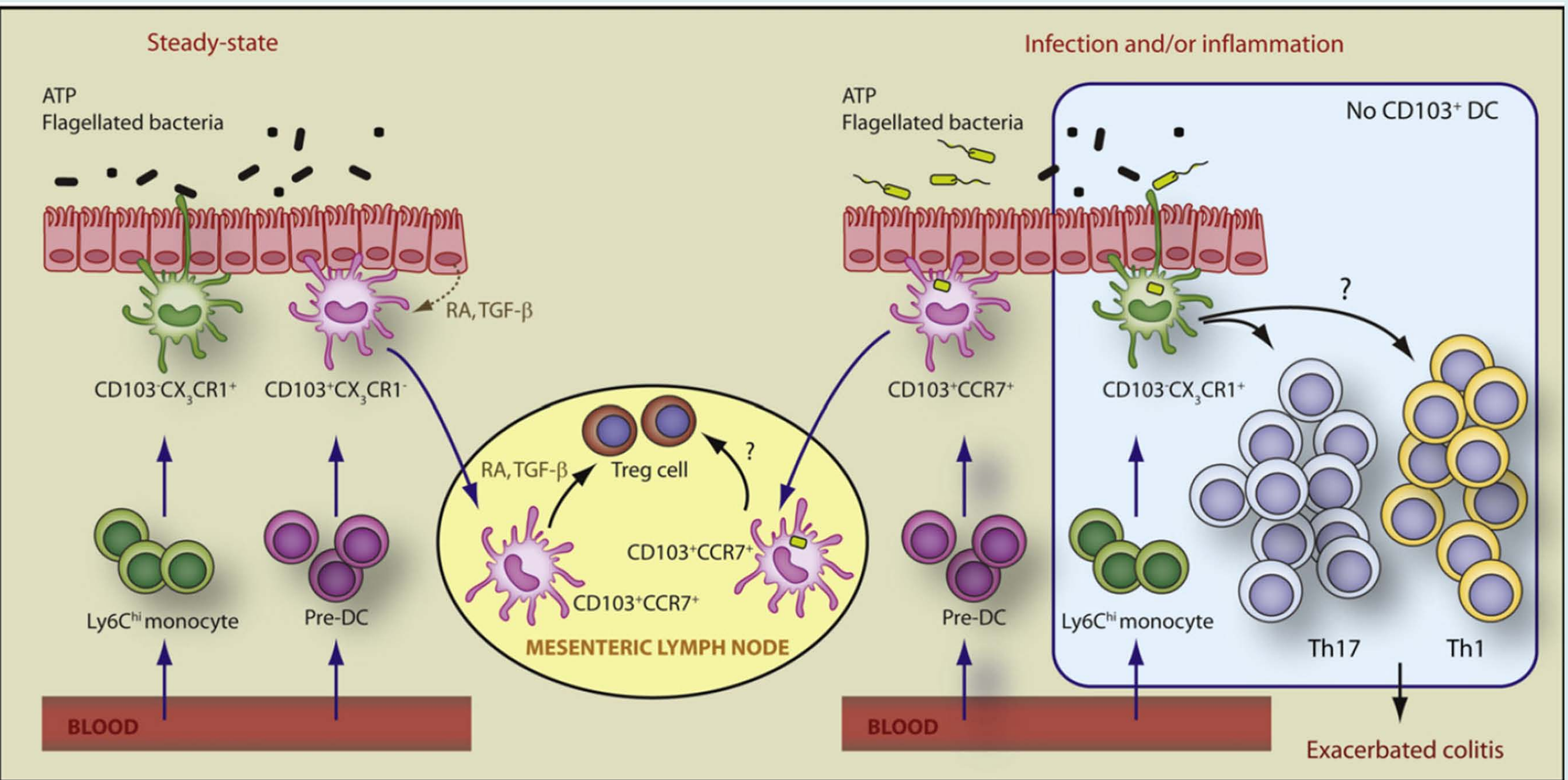


Step 3.

Sampling of the gut according to photon emission: I⁻ = corresponding to maximal ST concentration, I⁻ corresponding to no emission (no detectable bacteria) and finally I⁺ corresponding to tissue without emission but that have been in contact with bacteria.

Step 4.

Isolation of immune cells from I⁻, I⁰, I⁺ samples by mechanic and enzymatic digestion.



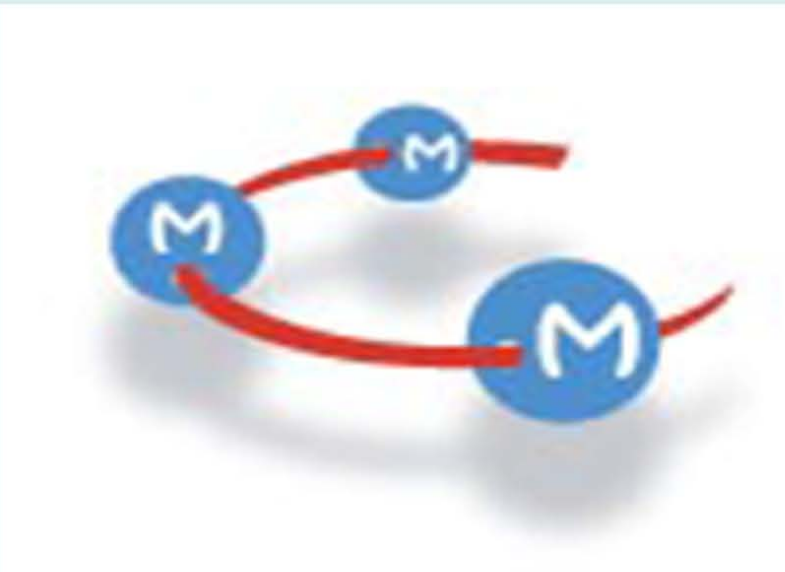
Rescignato M Immunity 2009

- The probiotic yeast *Saccharomyces boulardii* CNCM I-745 (*S.b*) is prescribed worldwide for prophylaxis and treatment of diarrheal diseases caused by bacteria, virus or antibiotics.
- In the streptomycin-pretreated model, we demonstrated that *S.b* modifies ST propagation along the intestinal tract and ST translocation (Plos One 2012 9 e103069).

AIM: Investigate the effect of *S. b* on the different DCs populations in the intestine of mice after *Salmonella* infection.

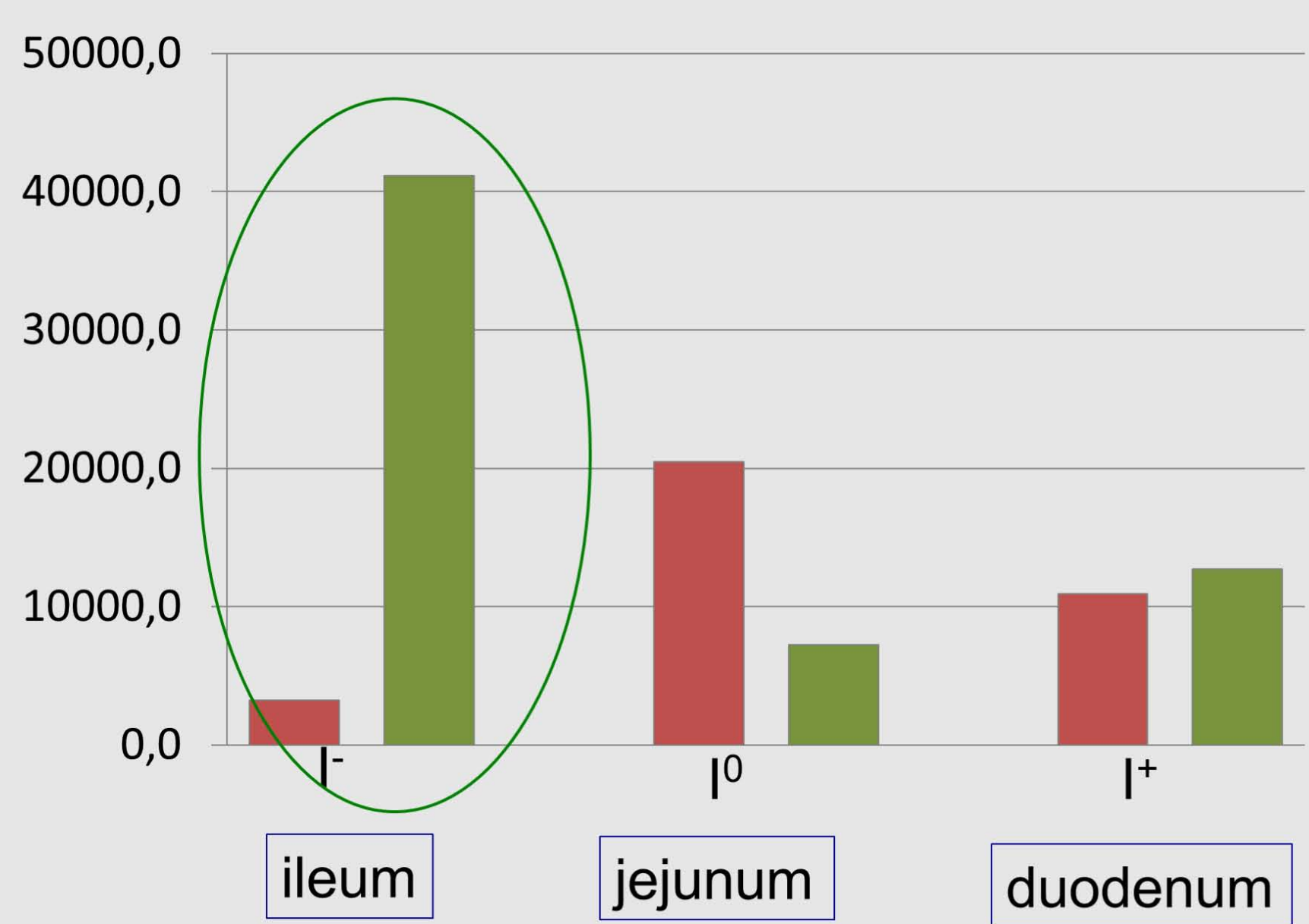
CONCLUSION: *S.boulardii* CNCM I-745 modulates the DCs composition of lamina propria by:

- increasing the non migratory CD103⁻DCs population in the ileum before ST arrival
- reducing the migratory CD103⁺ DCs population induced by ST in the jejunum

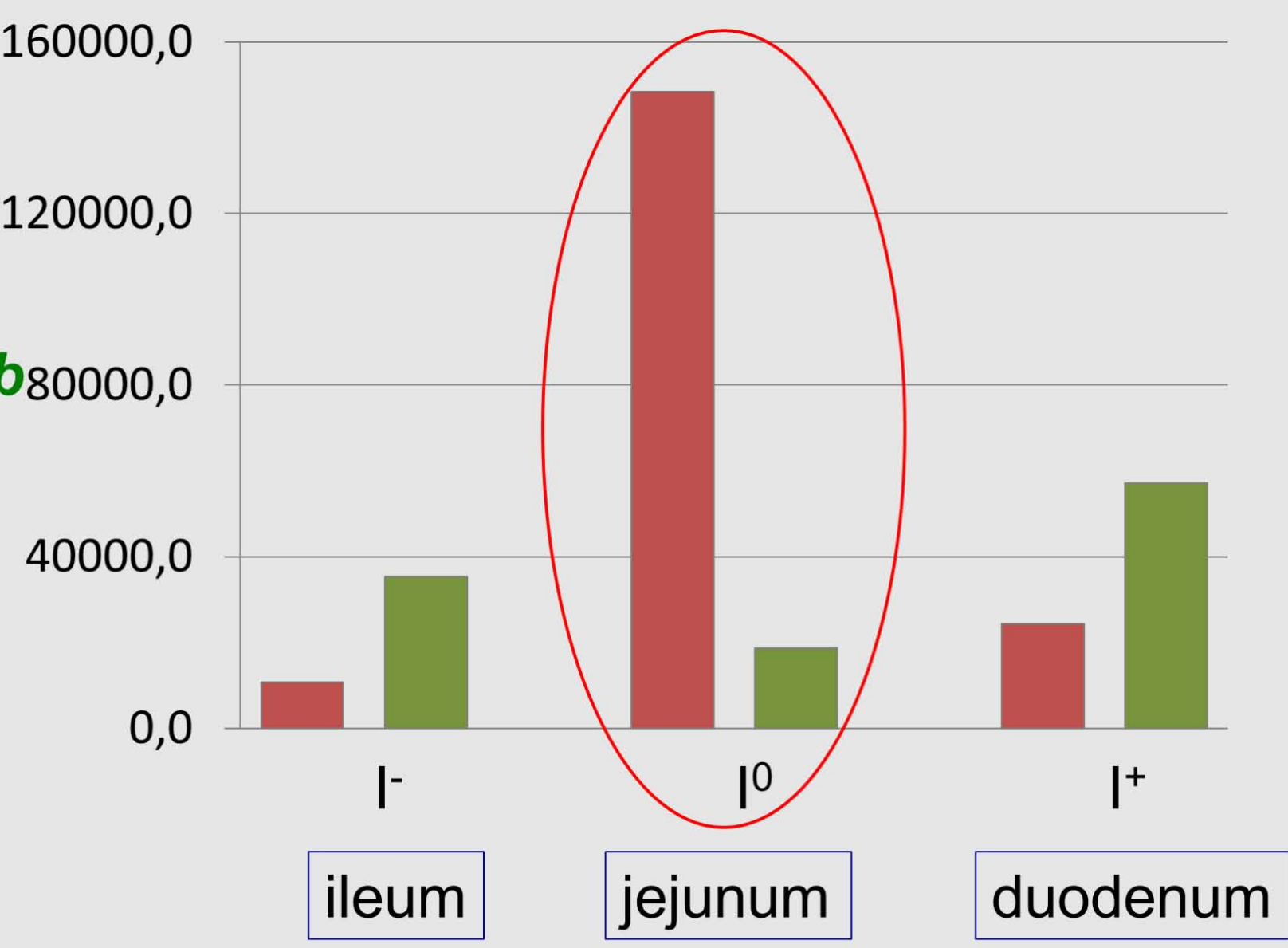


FACS analyzes of different DCs populations show:

CMHII⁺CD11b⁺CD103^{-(low)}



CMHII⁺CD11b⁺CD103^{+(high)}

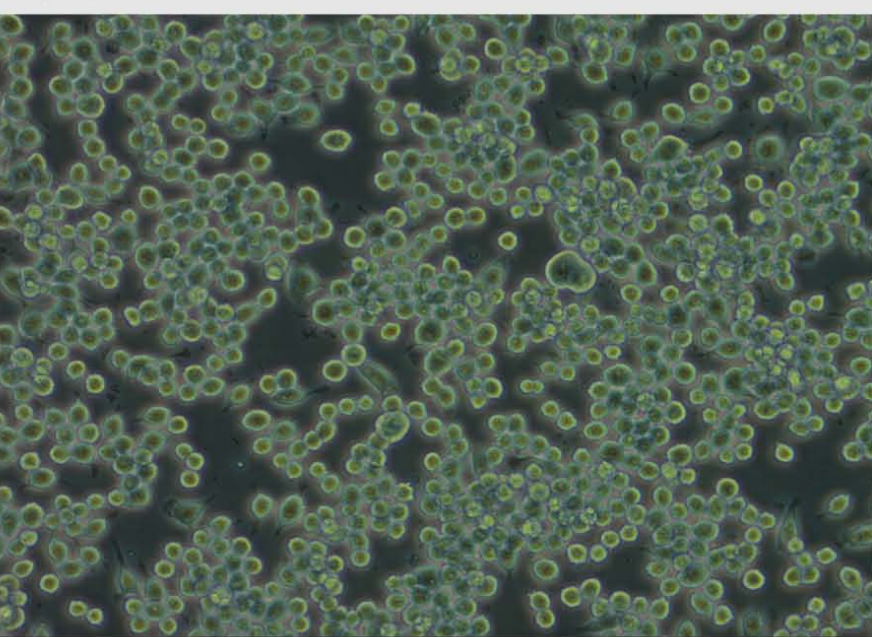


METHOD & RESULTS *IN VITRO*

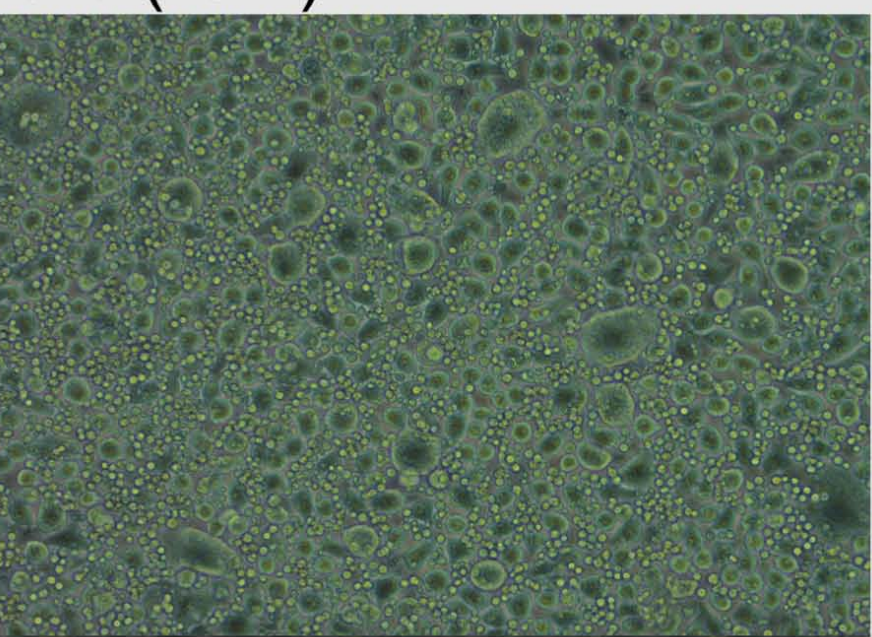
In vitro studies were performed on RAW264.7 cells exposed or not to *S.b* before infection. GM-CSF was detected in the supernatant by ELISA.

S.b modify the morphology of RAW264.7

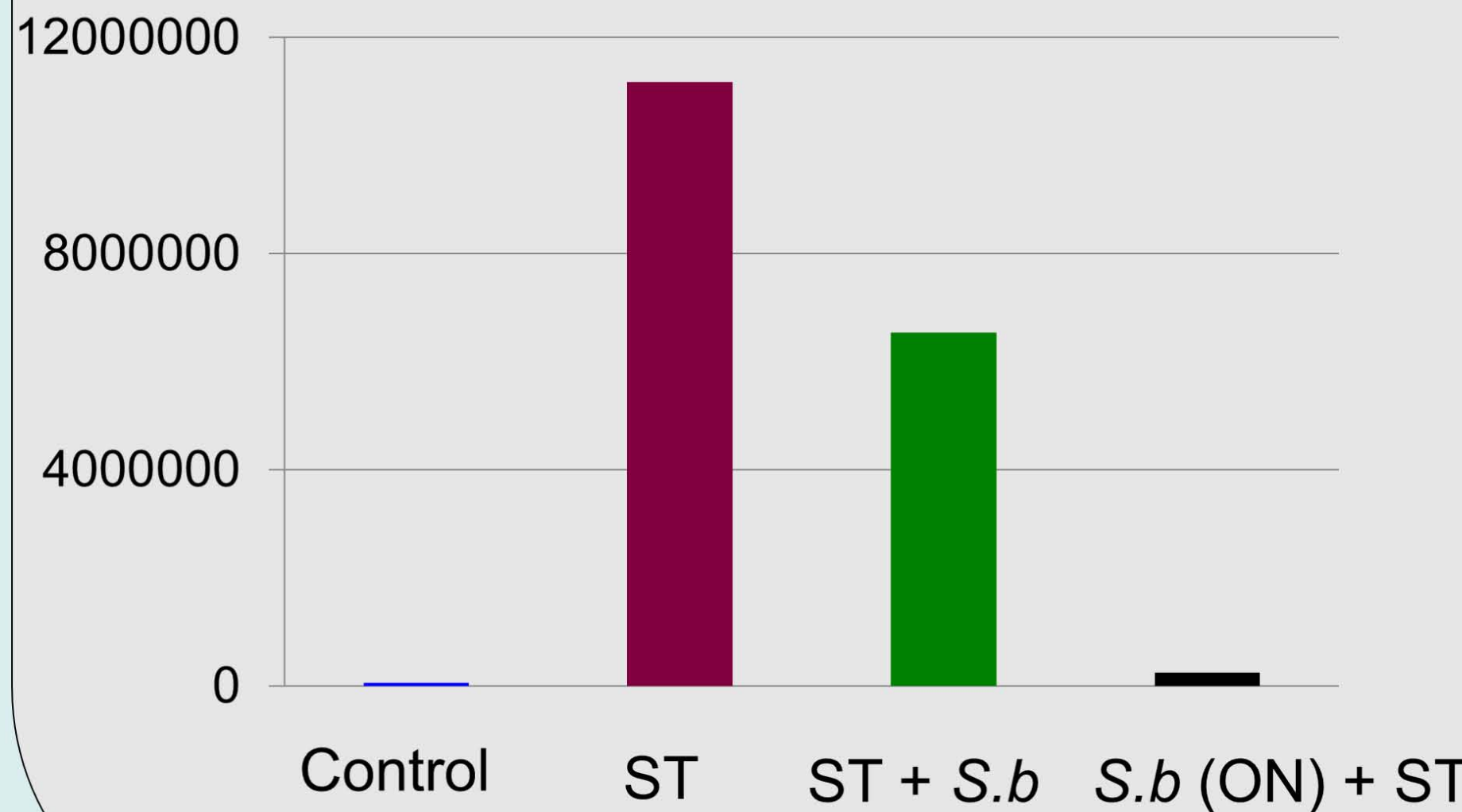
Control



S.b (ON)



S.b decrease the level of GM-CSF in the supernatant of RAW264.7



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