

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

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INTRODUCTION:

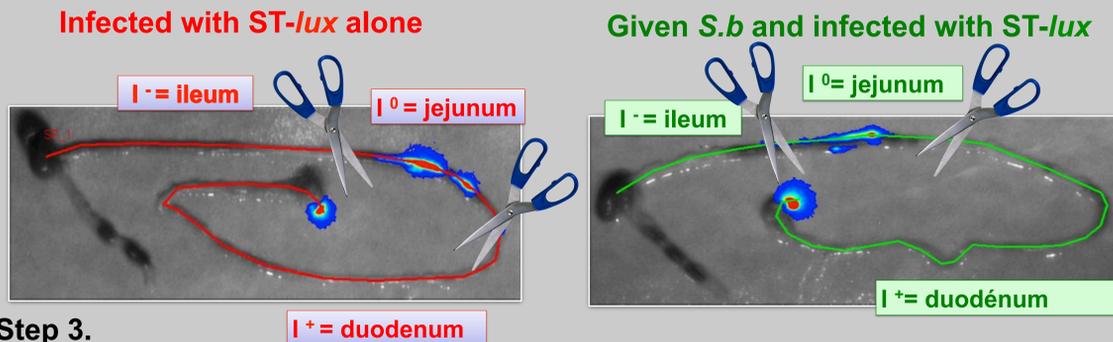
- Recent studies characterized in the lamina propria two DCs populations that include: MHCII⁺CD11c^{hi}CD103⁺CD11b⁺ (referred as CD103⁺CD11b⁺DCs) and MHC^{hi}CD11c^{hi}CD103⁻CD11b⁺ (referred as CD103⁻CD11b⁺DCs). Bugarovic M et al. (Immunity 2009) have previously established a difference of involvement of both populations of DC during infection of streptomycin-pretreated mice with *Salmonella typhimurium* (ST).
- 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 9 e103069).

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

METHOD & RESULTS IN VIVO

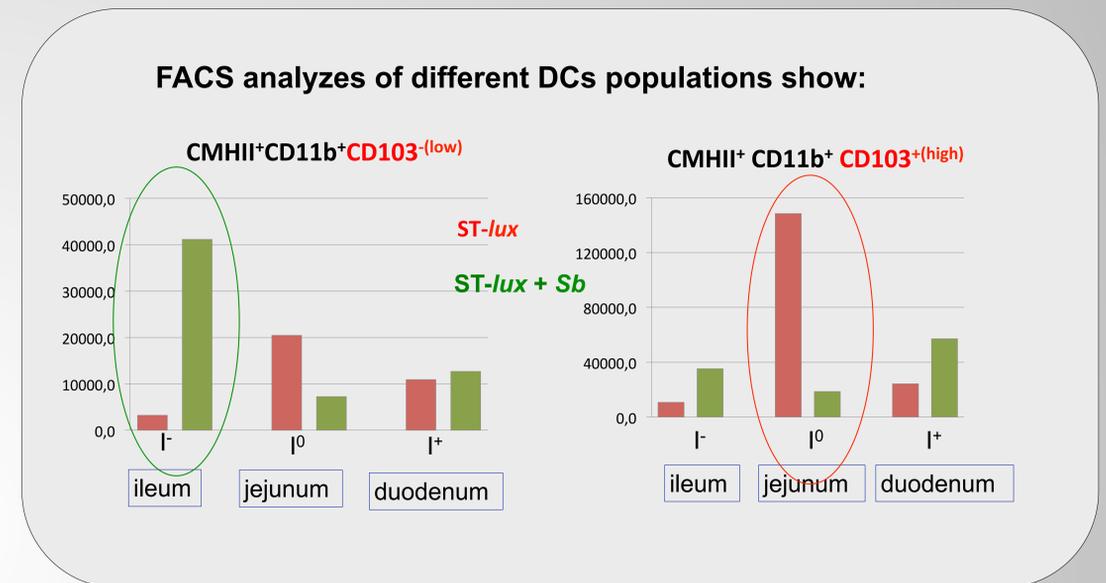
Step 1. Streptomycin pretreated mice were orally infected with Luminescent *Salmonella Typhimurium* SL1344 (*ST-lux*) alone or in the presence of *S.b*. Photonic emission was followed in the GT using Biospace Imaging system (Biospace lab, France).

Step 2. *ST-lux* localization in the intestinal tract extracted 45 min PI from mice:



Step 3. Sampling of the gut according to photon emission: I⁰ = 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.

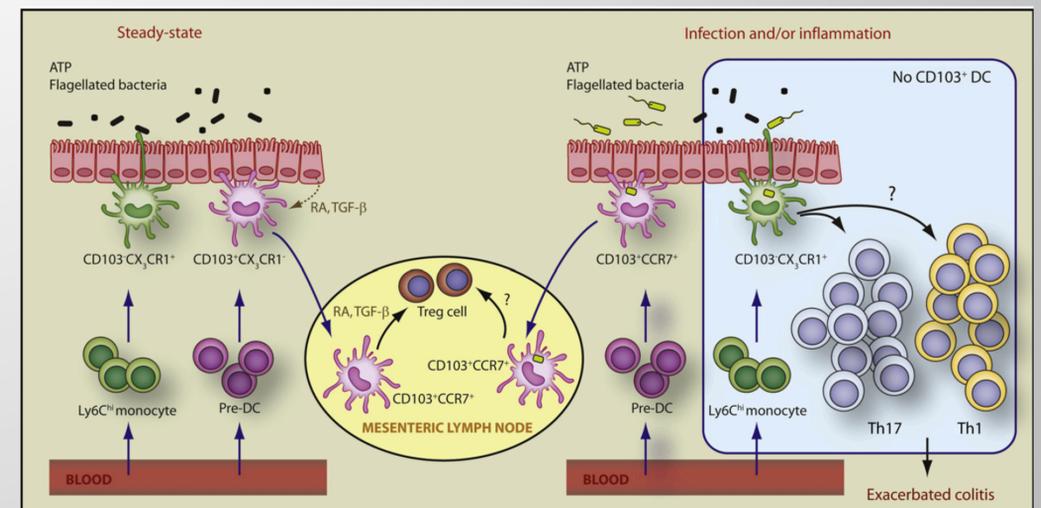
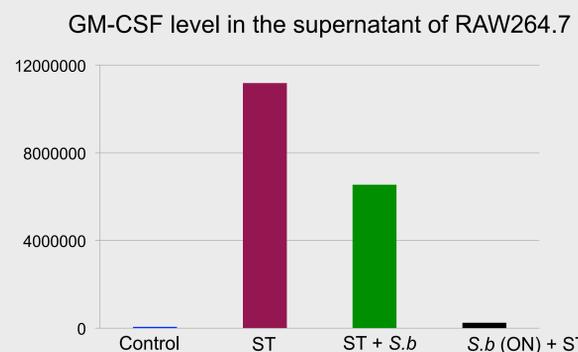
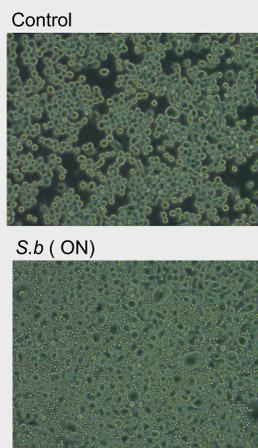
Step 4. Isolation of immune cells from I⁻, I⁰, I⁺ samples by mechanic and enzymatic digestion.



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



Rescignato M Immunity 2009

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

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

