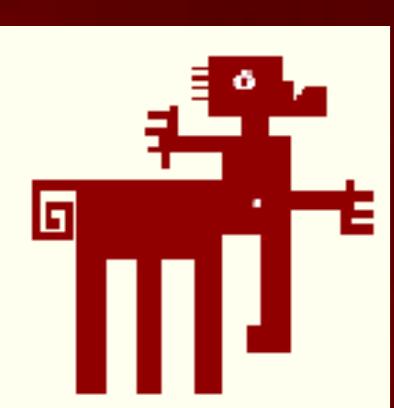


Influence of intestinal microbiota on the response to an experimental infection with *Salmonella enterica* LT2 in rats



Final Degree Project

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Introduction

The **intestinal microbiota** is a highly complex community of microorganisms that have a **symbiotic relation** with the host. The **intestinal immune system** has evolved together with it to protect the host while permitting the presence and benefits of the resident bacteria. The **immune response** can differ from individual to individual, and even **microbiota** itself is **conditioned** by the intestinal **environment**. Therefore, microbiota should be taken into account in studies with animals since it is a notable variable.

Results

Comparison between providers

- Provider B: the only that harboured *Bifidobacterium* spp. with adherence to epithelium (ileum and caecum), but the provider with less percentages of *Verrucomicrobia* (caecum).
- All providers: more adherence of *Clostridium* cluster XIV in the caecum than in the ileum.
- Provider A: significantly more *Clostridium* cluster XIV than provider C (caecum).

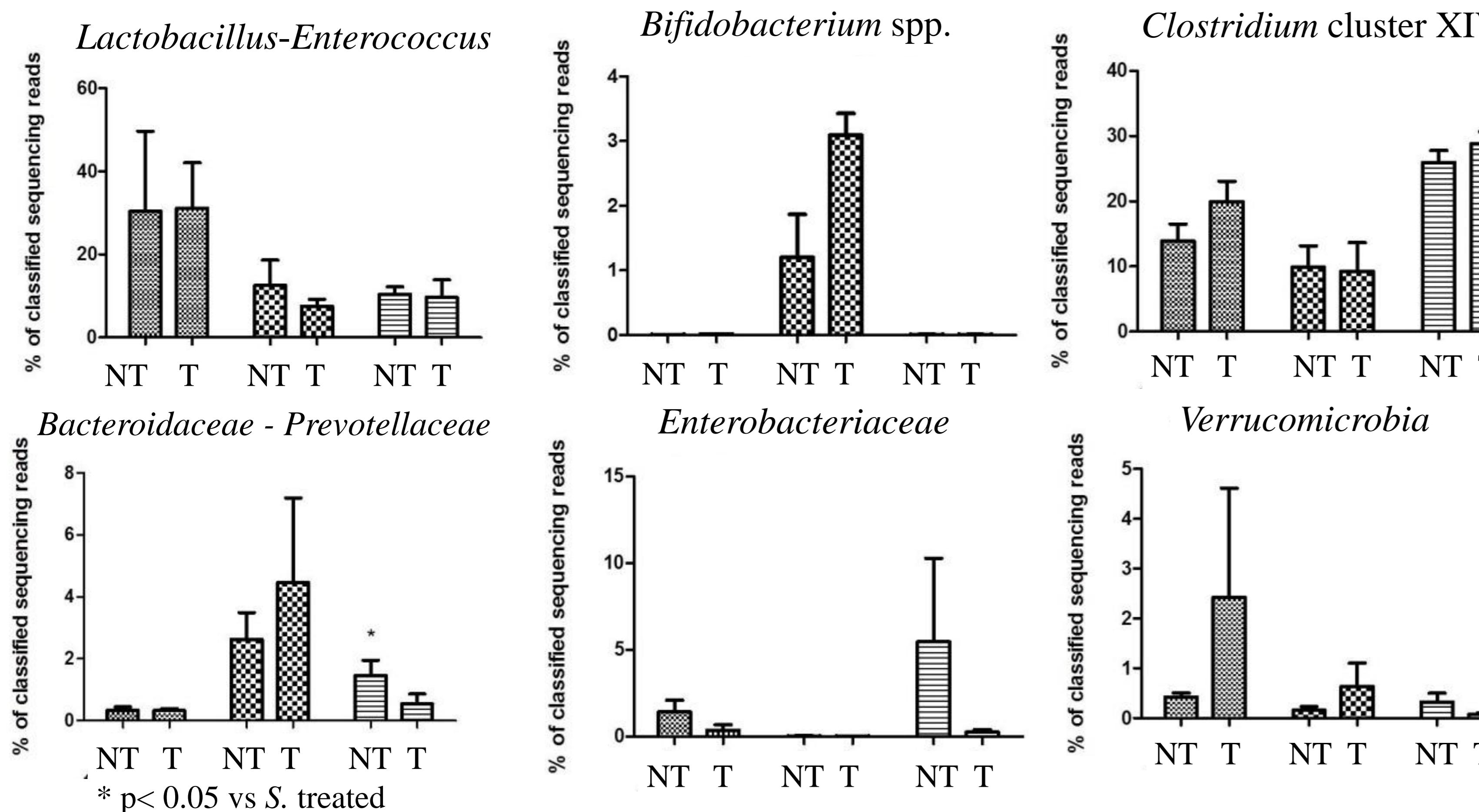


Figure 1. Percentages of each bacterial group in ileum content of the three providers.

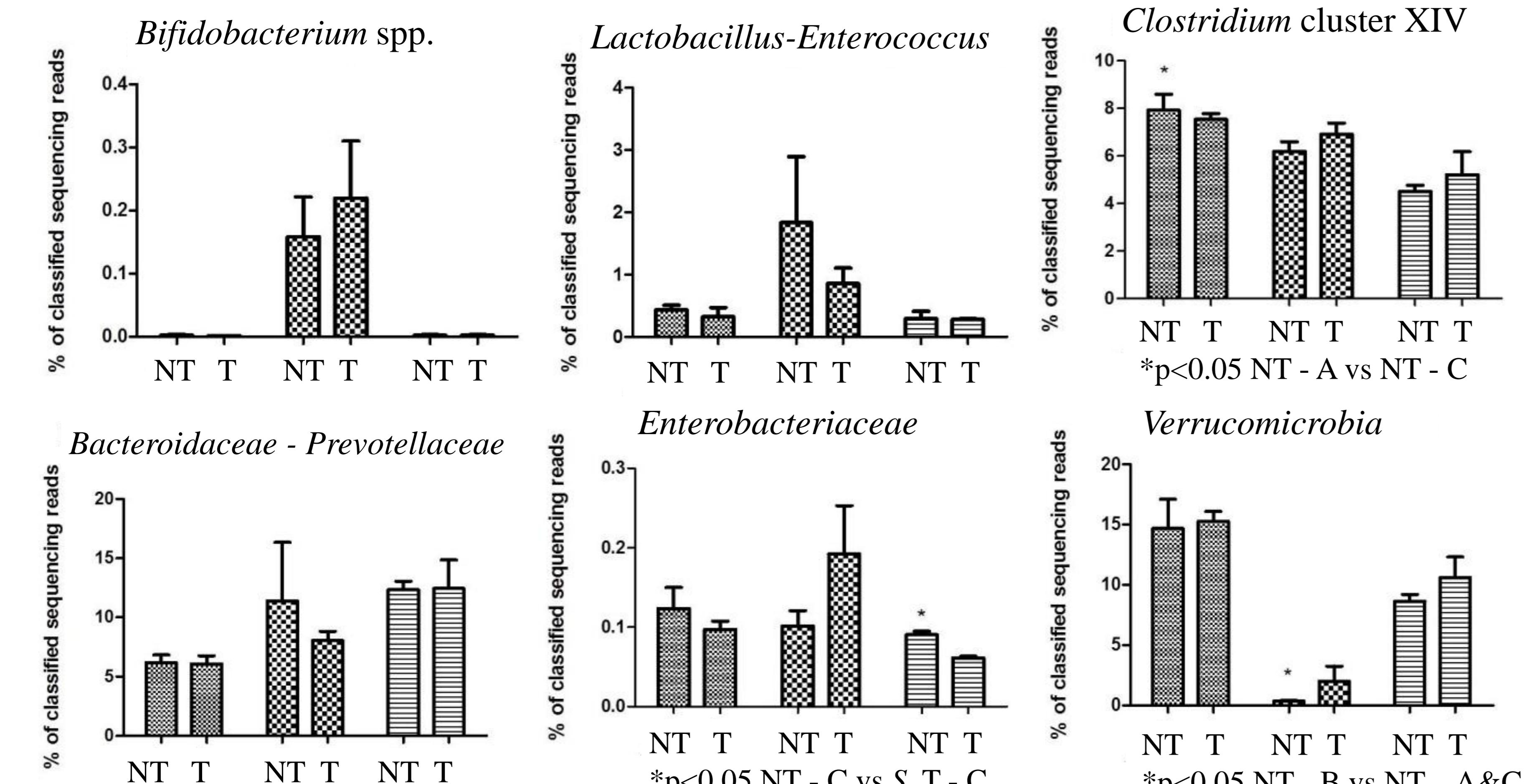
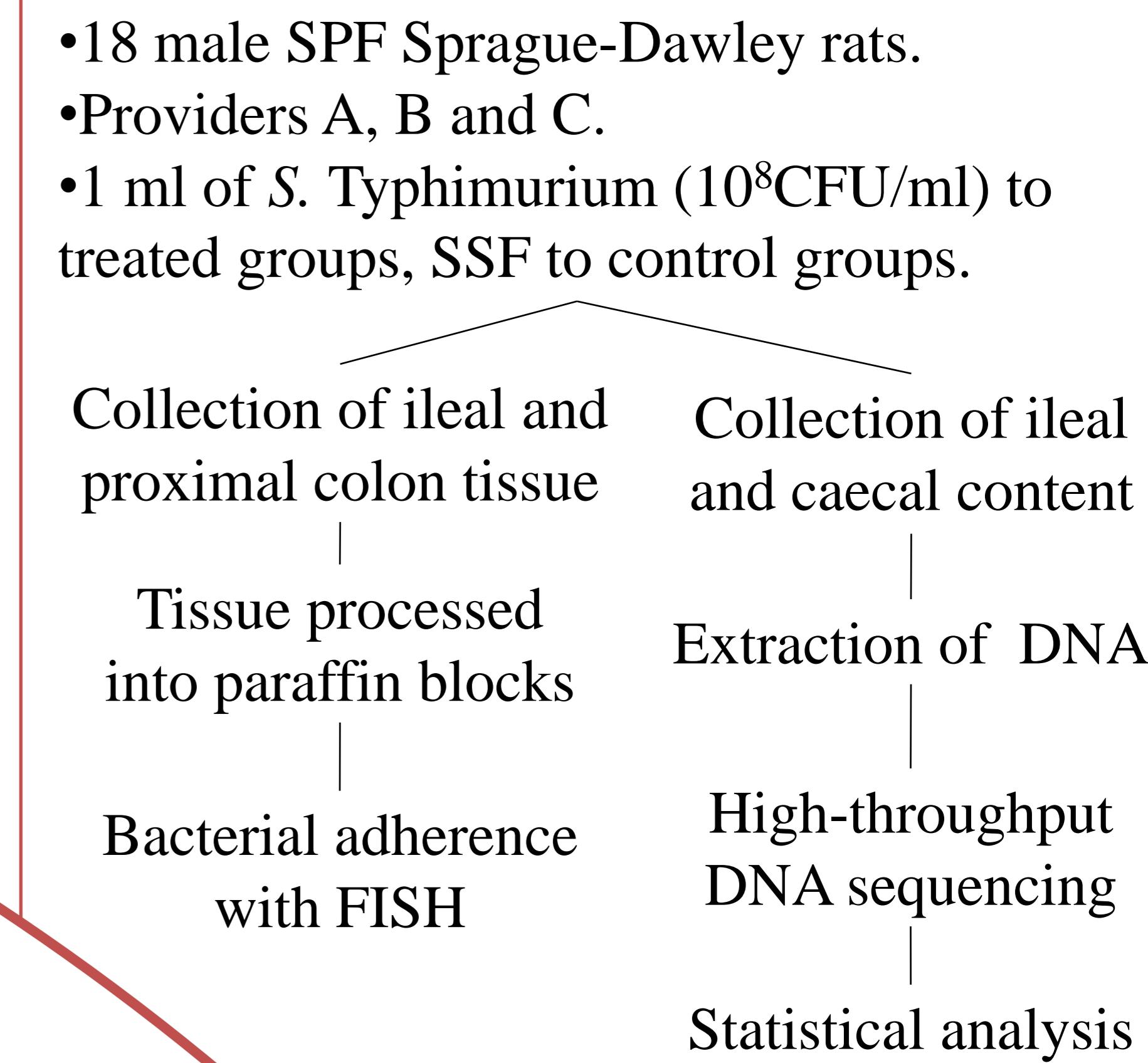


Figure 2. Percentages of each bacterial group in caecal content of the three providers.

Objectives

- To determine if there are **different changes** in the intestinal microbiota of rats from three providers with different microbiota **after inoculation** with *Salmonella* Typhimurium LT2.
- To compare** the microbiota of the **ileum** to that of the **caecum and proximal colon**.
- To compare** the microbiota between **providers** in control animals.

Materials and methods



Comparison between non-treated and *S. treated* animals

- Provider B: higher percentage of *Bifidobacterium* spp. in treated rats (ileum and caecum).
- Provider C: higher percentage of *Enterobacteriaceae* in control rats (ileum and caecum), but more adherence in treated rats (ileum).
- Providers A and B: more adherence of *Lactobacillus/Enterococcus* in control rats (ileum and colon).
- Provider C: more adherence of *Lactobacillus/Enterococcus* in treated rats (ileum and colon).
- All providers: more adherence of *Clostridium* cluster XIV in treated rats (colon).

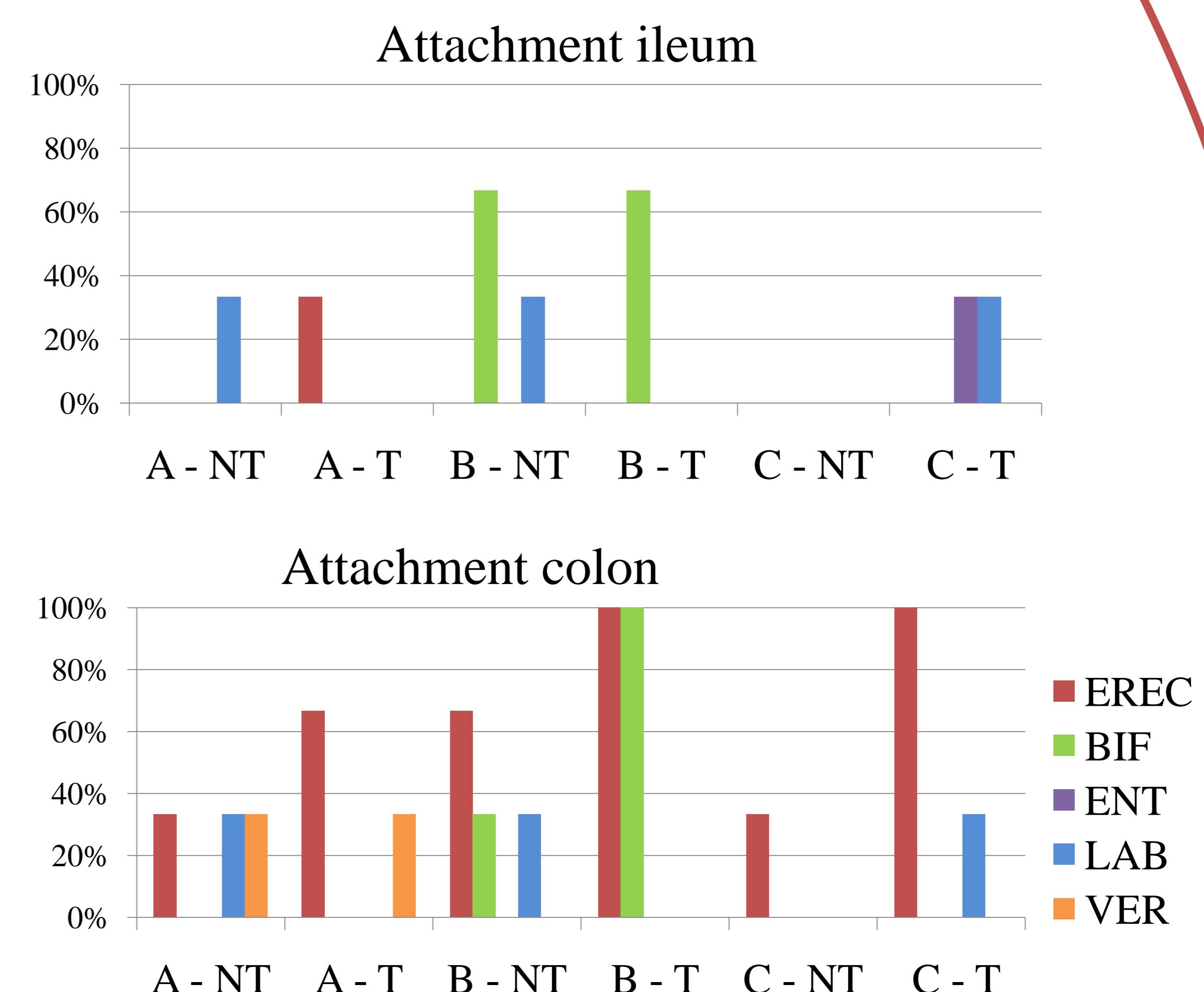


Figure 3. Percentages of animals presenting epithelial attachment studied with FISH. Each probe hybridizes with a group of bacteria. (NT=Non-Treated; T= *Salmonella*-Treated)

Conclusions

- Differences in diversity and types of bacteria between ileum and caecum or proximal colon.
- Microbiota of providers A, B and C is similar within the same provider and differs among them.
- There seems to be a positive correlation between the bacteria found in the lumen and those attached to the intestinal epithelium.
- Microbiota from each provider reacted in different ways to the infection with *Salmonella enterica* serovar Typhimurium.
- The provider with less diversity of microbiota is C.
- It is necessary to take into account the microbiota of experimentation animals.