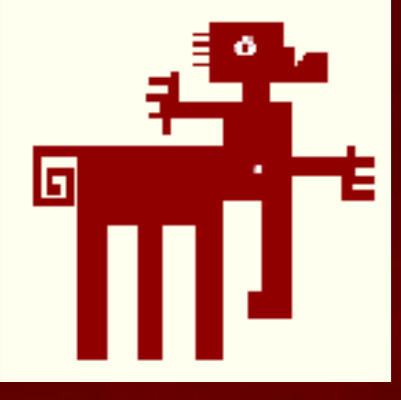


Influence of intestinal microbiota on the response to an experimental infection with *Salmonella enterica* LT2 in rats



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).

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).

Materials and methods

- 18 male SPF Sprague-Dawley rats.
- Providers A, B and C.
- 1 ml of *S. Typhimurium* (10^8 CFU/ml) to treated groups, SSF to control groups.

Collection of ileal and proximal colon tissue

Tissue processed into paraffin blocks

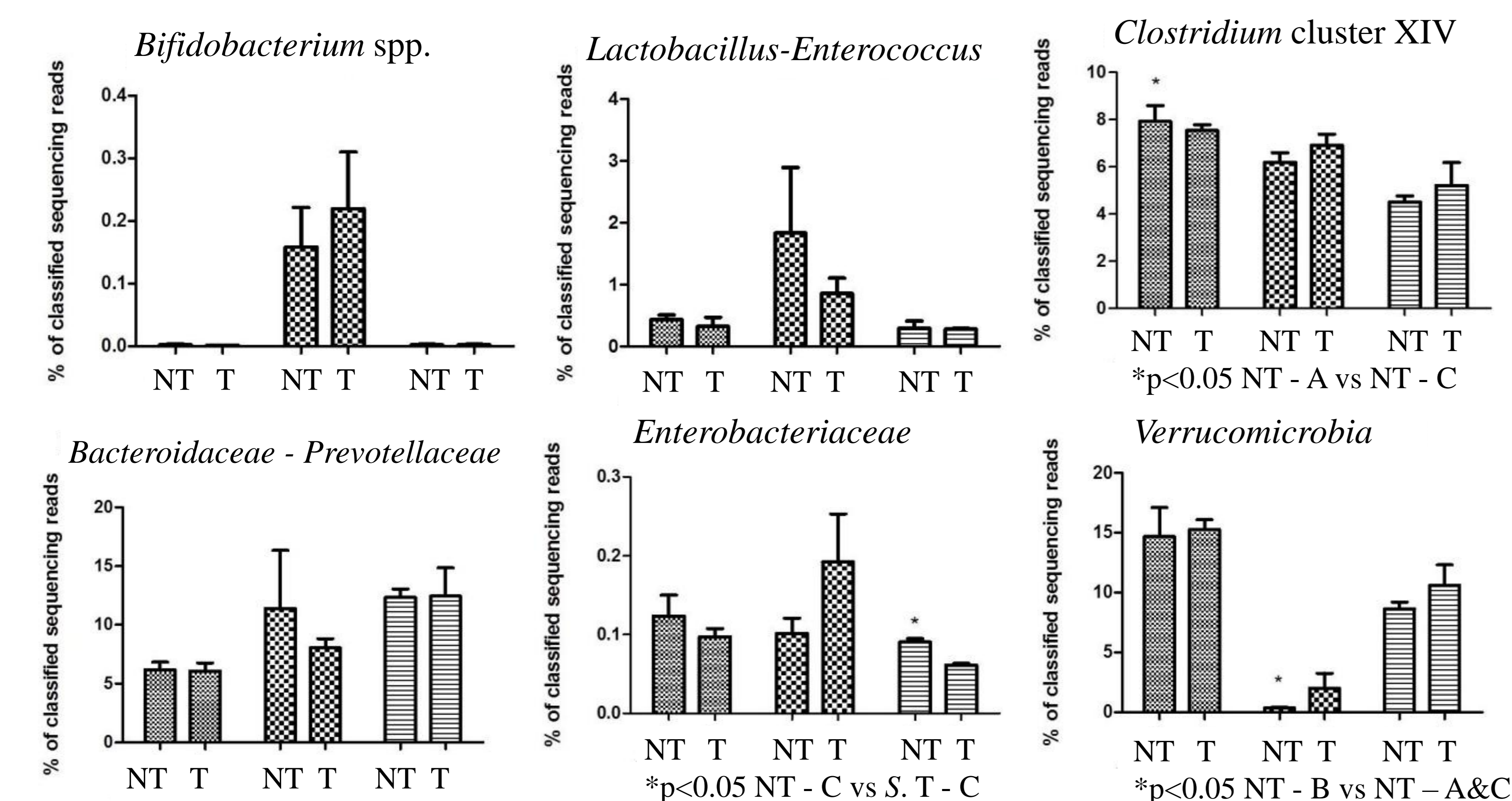
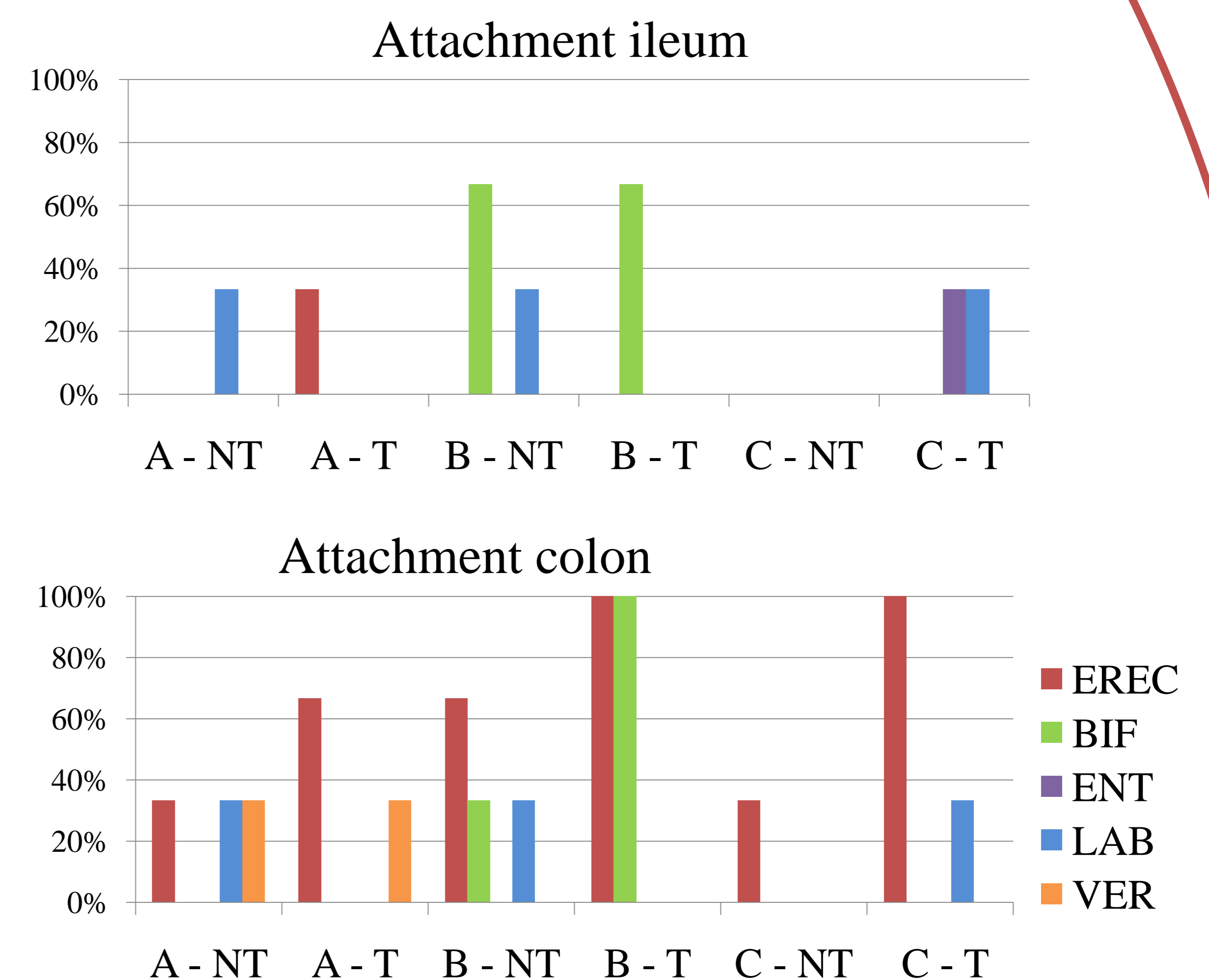
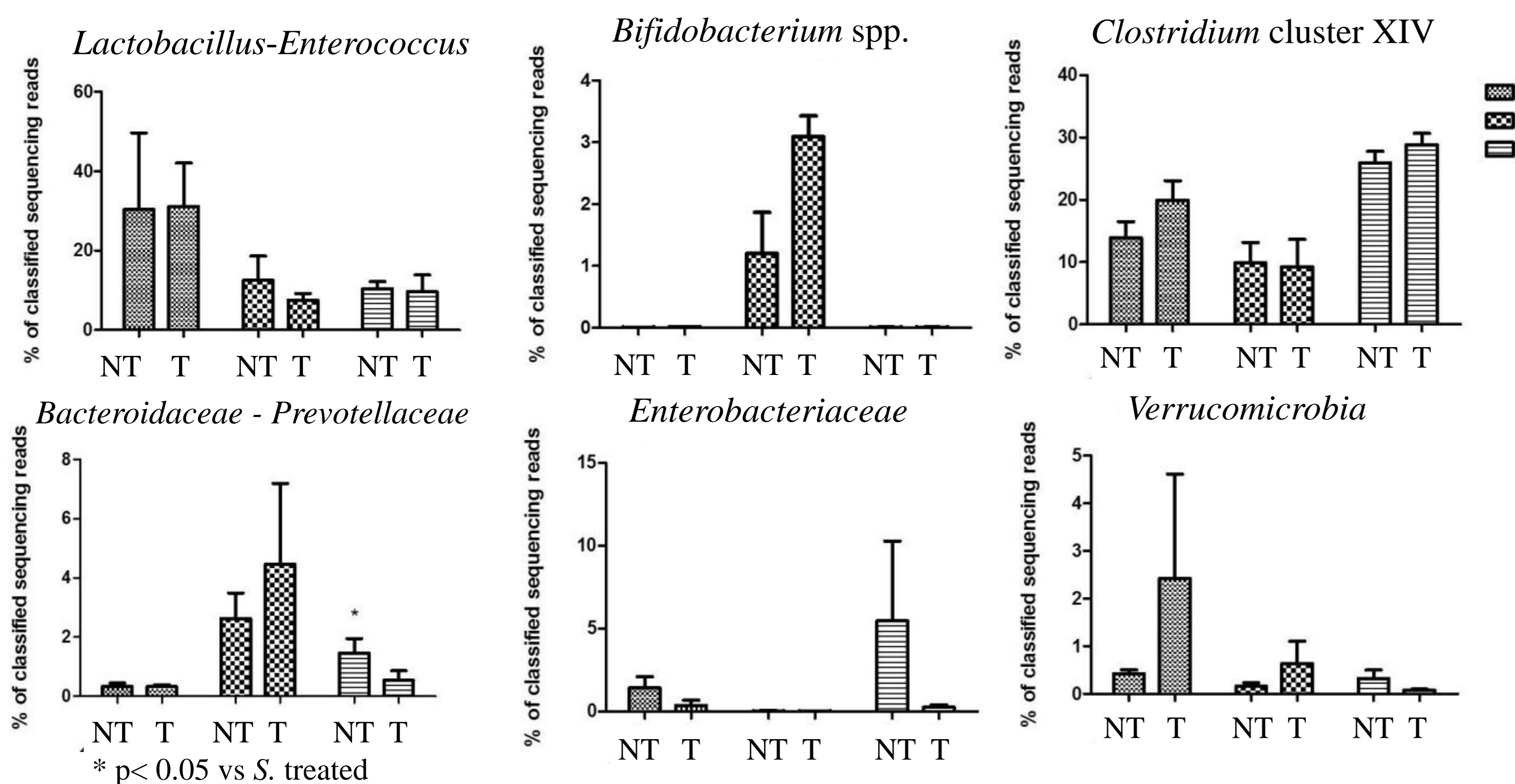
Bacterial adherence with FISH

Collection of ileal and caecal content

Extraction of DNA

High-throughput DNA sequencing

Statistical analysis



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.