

Composition of the gut microbiota in the naturally parasitised yellow-necked mouse, *Apodemus flavicollis*

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The gut microbiota plays a key role in the development of vital host functions, such as brain and immune system. Emerging evidence indicates that parasitic helminths also interact with the microbiota to affect host health. However, to date, the interaction between host, microbiota and helminths is not well studied. Wild rodents, such as the yellow-necked mouse, are naturally parasitized and thus represent a promising model to start to address this question. As such, we have investigated the variability of the gut microbiota of *Apodemus flavicollis* in five distinct locations of the gut, where parasites are commonly found.

We analyzed the variability of the gut microbial community in the stomach, small intestine, caecum, proximal and distal colon within fifteen *A. flavicollis* trapped in the Autonomous Province of Trento (Italy) using amplicon sequencing of the V1-V3 region of the 16S rDNA gene (454 technology, Roche) followed by bioinformatic analyses to determine the taxonomic composition and alpha- and beta-diversity of the microbiota at each gut section.

Taxonomic assignation at order level indicates that colon and caecum are dominated by *Bacteroidales* and *Clostridiales*, whereas in small intestine and intestine mucosa *Lactobacillales* are more abundant. These results are consistent with previous analyses of other mammal's gastrointestinal microbiota. Rarefaction curves show that microbiota diversity increases along the gut from 300 OTUs (small intestine) to over 1000 OTUs (colon). Principal coordinate analysis based on weighted and unweighted UNIFRACT distances indicates considerable inter-individual and -compartmental variability. Further analyses will determine to what extent the variability is related to the presence of parasitic helminths at these gut locations.

To our knowledge this study is the first providing insight into compartment-dependent variation of gastrointestinal microbiota in a wild rodent non-captive population.