

# Reciprocal Fecal Microbiota Transfer of Vendor-Dependent Gut Microbiota

Sara Bell<sup>1</sup>, Craig L. Franklin<sup>2,3,4</sup>, and Aaron C. Ericsson<sup>2,3,4</sup>

**VR M SP**

<sup>2</sup>MU Mutant Mouse Regional Resource Center, <sup>3</sup>MU Metagenomics Center,

<sup>4</sup>Department of Veterinary Pathobiology, University of Missouri CVM,  
Columbia, MO, <sup>1</sup>Iowa State University CVM, Ames, IA

## Background

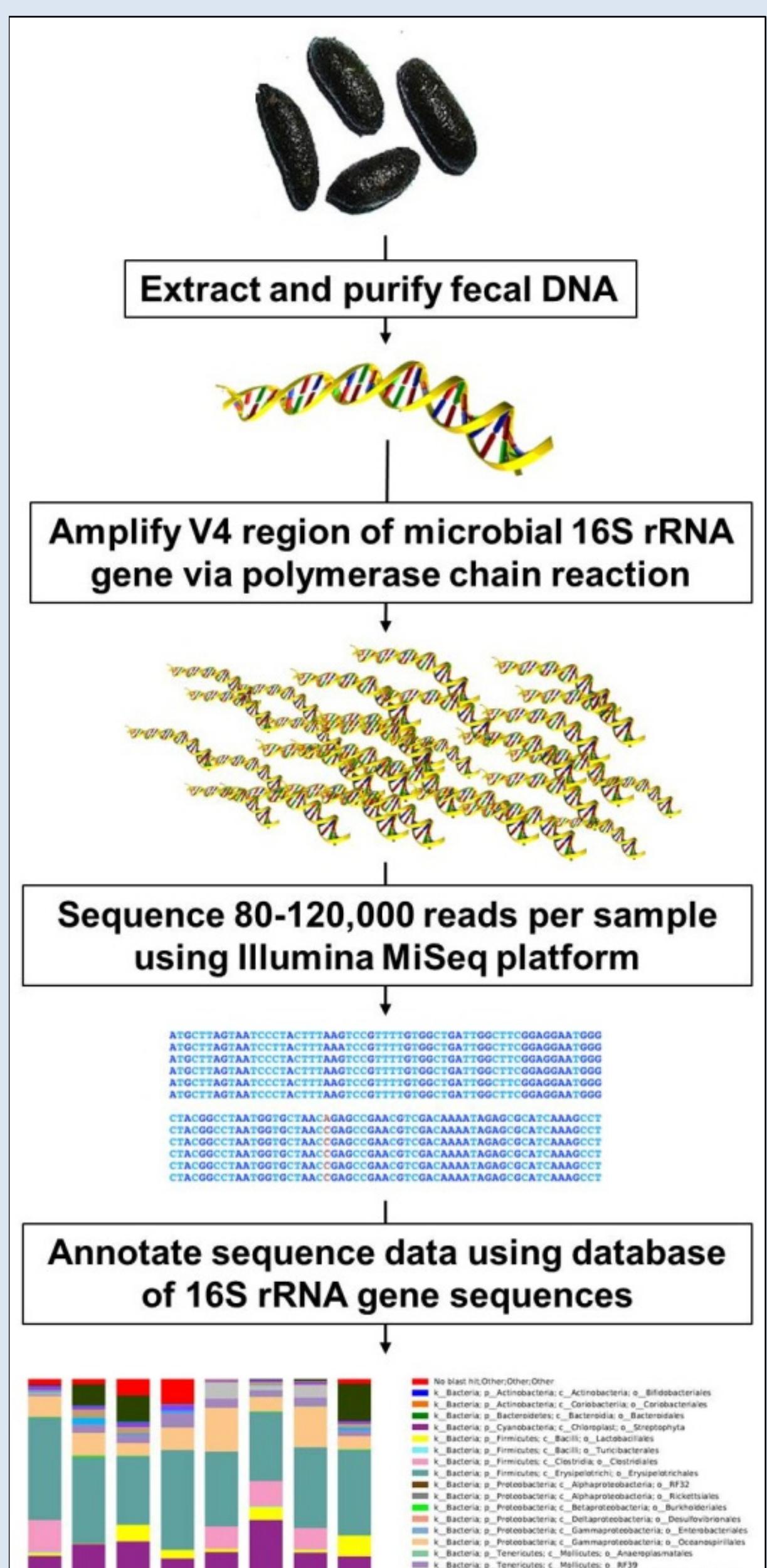
- Mice have varying gut microbiota (GM) depending on the vendor they come from
- Variations in the GM can impact the phenotype of research models
- The ability to manipulate the GM would allow researchers to reduce or remove this potential variable

## Hypothesis

Gut microbiota derived from mice from one vendor can be successfully transferred to mice from a different vendor after antibiotic administration.

## Methods

- Recipient animals were administered a combination of broad-spectrum bactericidal antibiotics for 3 consecutive days prior to fecal microbiota transfer (FMT)
- Following antibiotic treatment, fecal material was collected from donor mice and made into slurries
- The freshly prepared slurries were administered to the recipient mice via intragastric gavage once each day for a total of 3 days
- Samples were collected at 3 different time points: prior to the start of the study, immediately post antibiotic treatment, and 7 days post FMT
- The composition of GM was determined using next-generation sequencing of 16S rRNA amplicons



## Results

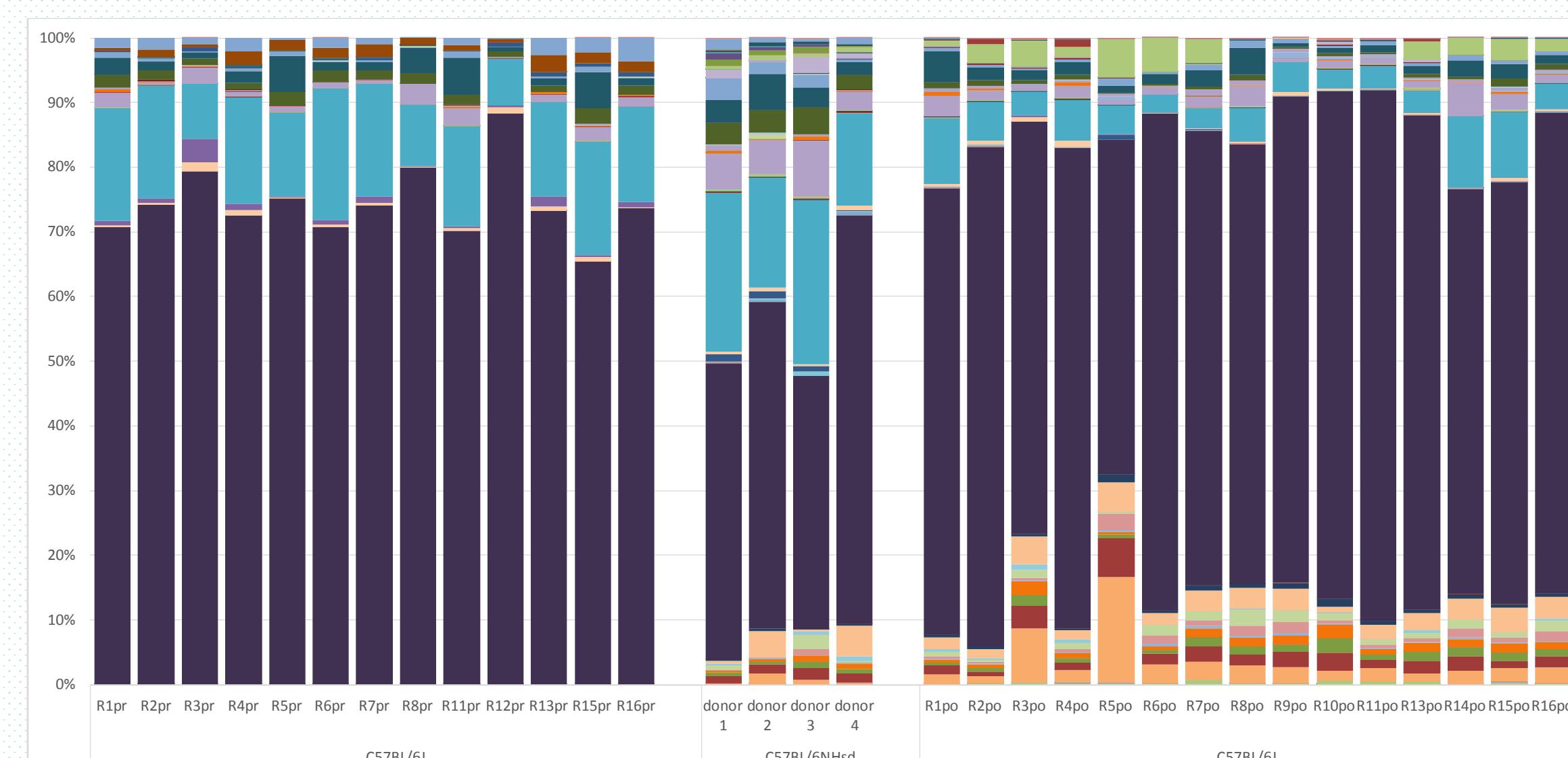


Figure 1. Bar graph showing the GM of Jax mice, Harlan donor mice, and Jax mice post-FMT, at the operational taxonomic unit level.

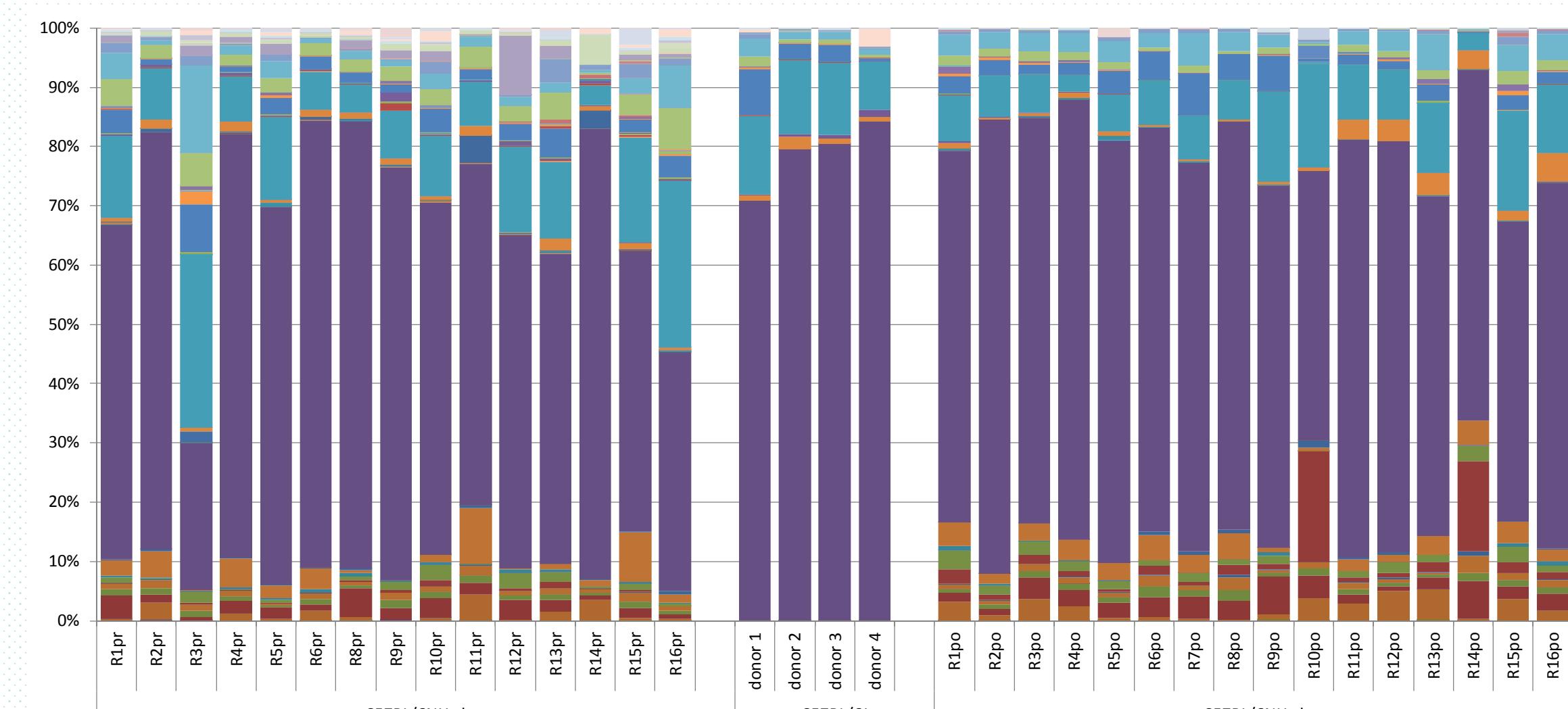
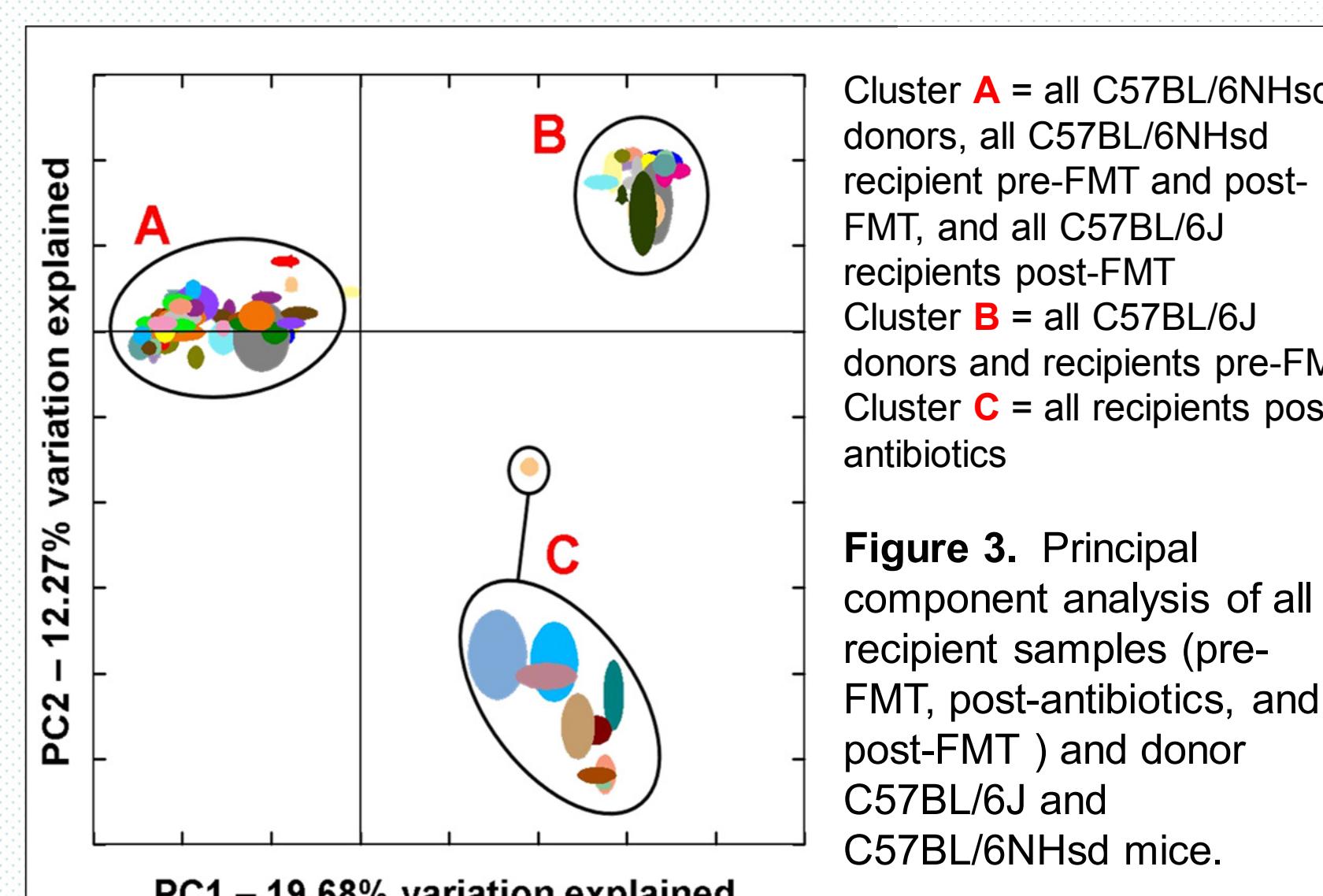
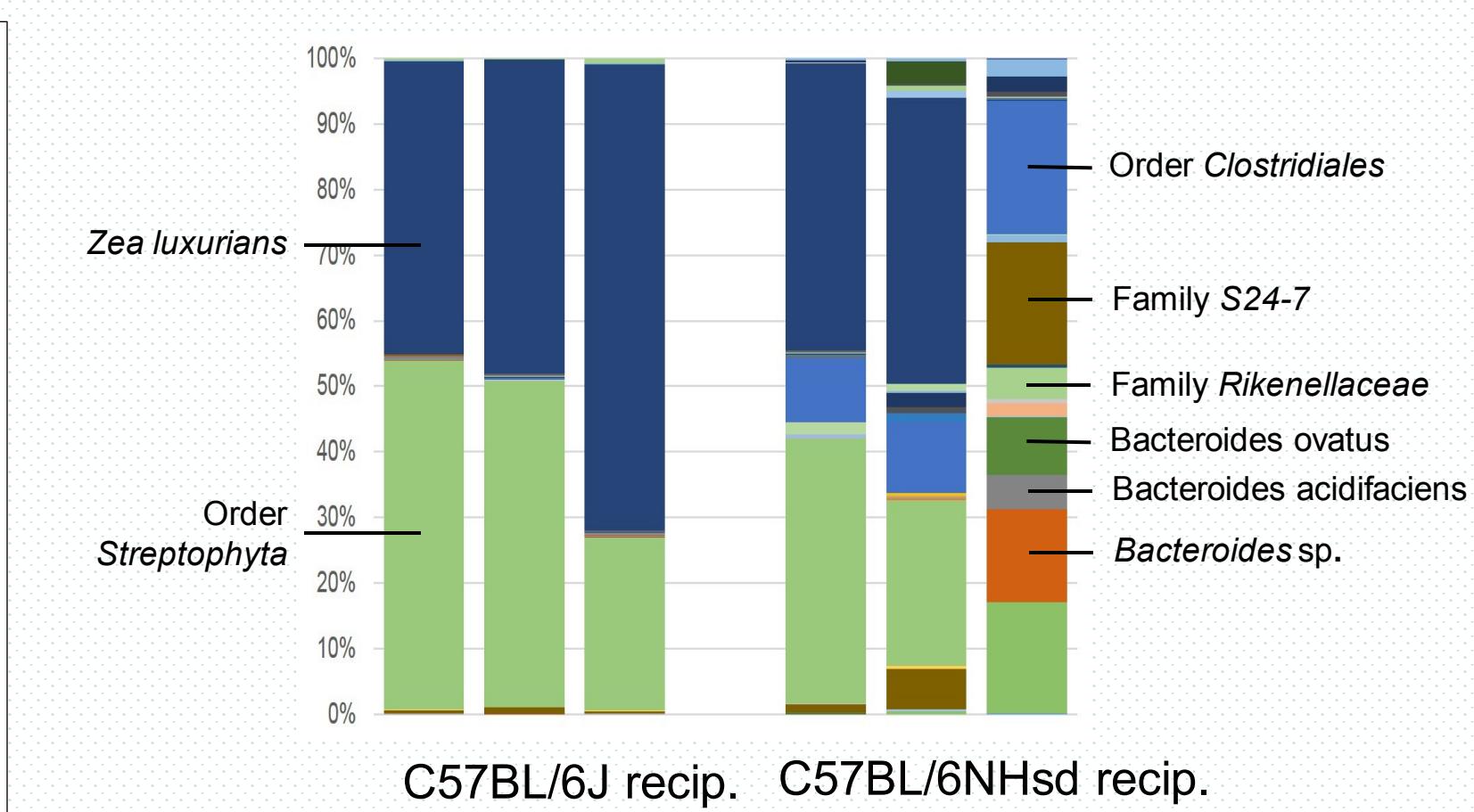


Figure 2. Bar graph showing the GM of Harlan mice, Jax donor mice, and Harlan mice post-FMT, at the operational taxonomic unit level.



Cluster A = all C57BL/6NHsd donors, all C57BL/6NHsd recipient pre-FMT and post-FMT, and all C57BL/6J recipients post-FMT  
Cluster B = all C57BL/6J donors and recipients pre-FMT  
Cluster C = all recipients post-antibiotics



## Conclusions

- The gut microbiota (GM) can be transplanted between adult mice via antibiotics and intragastric gavage of donor fecal material
- Transfer of C57BL/6NHsd GM into C57BL/6J recipients results in a post-FMT GM indistinguishable from donor mice
- Transfer of C57BL/6J GM into C57BL/6NHsd recipients was not successful with the tested protocol
- The antibiotic regimen used was unable to remove all endogenous microbes in C57BL/6NHsd mice

## Acknowledgements

This project was supported by an NIH grant to the MU Mutant Mouse Regional Resource Center (U42 OD010918). I would like to thank the American Society of Laboratory Animal Practitioners and the IDEXX bioresearch endowment for providing stipend support.