



University of Colorado Anschutz Medical Campus

Division of Biomedical Informatics and Personalized Medicine

Mail Stop 8617
12700 E. 19th Ave.
Aurora CO 80045

ATTN: Editors of *The ISME Journal*

Dear Editors,

Please consider our revised manuscript “A phylogenetic model for the recruitment of species into microbial communities and application to studies of the human microbiome” for publication in *The ISME Journal*. We have thoroughly revised our manuscript with the reviewers’ comments in mind. We detail the incorporated changes in our attached responses and tracked-changes documents.

Reviewer 1 was concerned about the extent to which our findings indicate community assembly processes, and suggested we revise our manuscript to focus on the applied aspects of our research. We agree with the reviewer that our findings have significant application, and have emphasized this in our introduction. We have also made several other changes to our manuscript per the reviewer’s advice. However, we feel it would be inappropriate to remove introduction of mechanisms and theory that underpin our hypotheses. In our paper, we reject our overdispersion hypothesis, which can only arise from competition between close relatives. This is a prominent hypothesis which has been shown to be true for some microbial communities, and consistently rejecting it (and the null) yields significant insight into ecology of the human microbiome.

Overall, the reviewers’ comments have helped us improve our manuscript. We also implemented Reviewer 1’s suggested null model, which agreed with our conclusions and strengthened our paper. Using our mathematical model, we found that the human gut microbiome exhibits strong nepotism, which both reviewers support as an interesting conclusion worthy of publication. Furthermore, we eliminate competition between closely-related species (*i.e. priority effects*) as a predominant mechanism, which has shown to be a significant mechanism in previous studies in microbial ecology. For these reasons, we think our paper is suitable for your continued consideration for publication in *The ISME Journal*.

Thank you.

A handwritten signature in blue ink that reads "John Darcy".

John L. Darcy, PhD