

## Reviewer Report

**Title: Inferring microbiota functions from taxonomic genes: a review**

**Version: Original Submission**    **Date: 10/31/2021**

**Reviewer name: Trevor Charles**

### Reviewer Comments to Author:

This review manuscript provides an overview of the various options that have been developed for inferring function from taxonomic data, for Bacteria, Archaea and Fungi. It should be a good resource and introduction to the topic. One aspect that could be developed a bit more is that of specificity in functional prediction.

Throughout, please change "consists in" to "consists of"

Line 113: It is unclear why soil quality is mentioned here

Line 145: Change "ocean" to "marine" or "aquatic"?

Line 148: Change "rDNA" to "rRNA gene"

Line 219: The comparison here to shotgun metagenomics should consider the impact of horizontal gene transfer and gene loss. Similarly, Line 545 should consider gene deletion in addition to horizontal gene transfer.

Line 552: In addition to plasmid transfer, should consider phage / viruses

Line 665: It could be instructive to provide more examples of practical applications

Line 699: It is not clear why these particular soil measurements are of interest

Figure 1: Change "Functional inference" to "Functional inference"

Figure 2: Add data for most recent years?

Figure 9: Change "Unknow or few data" to "Unknown or insufficient data"

## Methods

Are the methods appropriate to the aims of the study, are they well described, and are necessary controls included? Choose an item.

## Conclusions

Are the conclusions adequately supported by the data shown? Choose an item.

## Reporting Standards

Does the manuscript adhere to the journal's guidelines on [minimum standards of reporting?](#) Choose an item.

Choose an item.

## Statistics

Are you able to assess all statistics in the manuscript, including the appropriateness of statistical tests used? Choose an item.

## Quality of Written English

Please indicate the quality of language in the manuscript: Choose an item.

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