LSA ECOLOGY AND EVOLUTIONARY BIOLOGY
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To: Frontiers in Microbiology Editorial Board July 26, 2016

Dear Editorial Board,

We are submitting the manuscript "***Are oligotypes meaningful ecological and phylogenetic units: a case study of* Microcystis *in freshwater lakes***" by Michelle Berry and co-authors to be considered for publication as a perspective piece in *Frontiers in Microbiology*. The material is original research, has not been previously published and has not been submitted for publication elsewhere while under consideration. We also declare to not have any competing financial interests in relation to this work.

This work provides a critical perspective on the use of the oligotyping method to gain higher population resolution from 16S rRNA gene amplicon studies. Oligotyping has become a very popular method in the literature, but we believe that many studies draw pre-emptive conclusions on the ecology of microbial populations based on correlations between oligotype patterns and environmental conditions. We critically assess specific claims about the ecological and evolutionary interpretation of oligotypes from the literature, and we support our arguments with a case study of *Microcystis*, an important contributor to cyanobacterial harmful algal blooms worldwide.

Specifically, we:

1) Explore whether oligotypes represent ecologically cohesive units by ground-truthing ecological hypotheses generated from 16S observational data with whole genomes of 46 *Microcystis* isolates.

2) Explore whether oligotypes represent phylogenetically cohesive units by overlaying oligotypes onto a MLST-based phylogenetic tree for the 46 *Microcystis* isolates.

3) Posit a hypothesis about which kinds of traits are, or are not, likely to be distinguishable by oligotyping analyses.

We think this is an important and timely contribution that addresses some of the limitations of oligotyping studies and 16s rRNA gene amplicon studies more broadly. Since Frontiers has previously published a featured issue on oligotyping, we think this is a particularly relevant submission to this journal.

Thank you for considering our manuscript for publication,

Vincent Denef