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Limnology & Oceanography Editorial Office

Dear L&O Editor,

We are excited to submit our original research article, "Time-series metatranscriptomes reveal conserved patterns and ecological interactions between phototrophic and heterotrophic microbes in diverse freshwater systems," to the L&O special issue, "Linking metagenomics to aquatic microbial ecology and biogeochemical cycles." We studied diel cycles of microbial gene expression to infer interactions between freshwater microbes. This work has not been submitted elsewhere for publication.

Because diel cycles are prevalent in freshwater and because previous work has identified diel cycles in marine microbial communities, we sought to use diel trends in metatranscriptomics to hypothesize interactions and metabolite exchanges among freshwater microbes. To make our results more generalizable across different lake types, we selected three lakes for this experiment with different trophic statuses. We detected diel trends in gene expression in all three lakes and found that genes related to photosynthesis were more expressed in day, while genes related to sugar transport were more expressed at night. Our results indicate that sugars may be exchanged between phototrophic and heterotrophic microbes in freshwater and suggests a sophisticated level of organization within microbial communities.

This work should be of interest to a broad audience reading L&O because it links metatranscriptomic data on microbial communities to biogeochemical cycling and previously observed diel trends. While this paper address broad research questions, we expect that other researchers will use this dataset to investigate specific microbial taxa or metabolic functions of interest, making this a resource to the larger community.

AML designed experiments, collected and processed samples, analyzed the data, and wrote the manuscript. FOA analyzed the data and wrote the manuscript. SB and KDM designed experiments, collected and processed samples, and wrote the manuscript. The authors declare no conflict of interest.

Sincerely,

Alexandra Linz
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