Dear Editor,

I am writing to submit our original research manuscript titled “Nectar compounds can impact bacterial and fungal growth and shift community dynamics ” for consideration for the journal Microbial Ecology.

We believe that this paper is of general interest to your readership. We examine how environmental filtering by plant chemistry shapes growth and competitive dynamics in nectar microbe communities. Our results suggest that compounds that plants produce in nectar, often assumed to evolve primarily in response to plant interactions with macro-organisms including pollinators or herbivores, can also affect microbial growth and assembly on plants.

This paper describes original research on the system of floral nectar microbial communities, which previous studies have found to be species poor and often dominated by a consistent set of microbes worldwide. We tested the hypothesis that filtering by secondary chemicals in nectar drives impoverished microbial communities. We used in-vitro assays of the impact of 6 nectar compounds on the growth of 12 microbial species and also tested whether compounds affected microbial community assembly. We found that some common nectar compounds broadly suppressed growth across many but not all microbes tested, and some increased growth. While some nectar specialist microbes showed strong resistance to nectar compounds, we did not find evidence to support the hypothesis that filtering is the sole driver of nectar community formation. Many microbes that are rarely found in nectar grew as well or better than nectar specialists in some of the compounds we assayed. While nectar chemistry is typically assumed to evolve in response to pollinator-mediated selection, we show that nectar chemistry affects microbial growth and raises the possibility that effects on plant-associated microbes should be considered in potential ecological or evolutionary drivers of plant secondary chemistry.

No part of this paper or the findings within are in any separate work, published or unpublished, or have been submitted to another journal. This paper in its current form has been made available as a preprint at biorxiv (https://doi.org/10.1101/2022.03.29.485809)

We believe the following scientists have the expertise to rigorously review this work:

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Thank you for your time and consideration,

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