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Peer Review

Review of: "Polyethylene Terephthalate (PET) Primary Degradation Products Affect c-di-GMP-, cAMP-Signaling, and Quorum Sensing (QS) in Vibrio gazogenes DSM 21264"

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The manuscript describes the identification of a PETase encoded by the species Vibrio gazogenes SM 21264. The authors show that this is a PETase, upon purification of the degradation of PET, releasing the predicted byproducts.

With many PETases already described, the authors use the system to investigate the regulation of PETase expression at the transcription level on PET foil, powder, and other substrates, relating the activity to the formation of biofilms versus planktonic bacteria. The study is relevant to how the bacteria, in this case a marine isolate, are perceiving signals in the environment but also how this might be used as a technology to reduce plastic pollution in our plastisphere. The manuscript thus addresses a large gap in knowledge.

The manuscript is well written, and the data support the authors' conclusions. I have minor comments for the authors' consideration.

1. In figure 1, are the long fibers DNA or pili, both of which play roles in biofilm formation? Did the authors observe, for example, the expression of pilus or fimbrial genes, along with ompU, in the data presented in Table 2?
2. What was the crystallinity of PET foil listed? Is it different from the 50% listed for the PET powder? How might this affect the data presented?
3. If the adhE gene was identified in transcriptomic data, why wasn't DSM 21264 able to grow on TPA and EG, breakdown products of MHET, as stated on page 11?

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4. In the Figure 6 legend, what are R bodies? Does growing on synthetic carbon sources elicit stress responses, which might be indicated by the induction of phage and other genes?

Declarations

Potential competing interests: No potential competing interests to declare.