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Kelley, Lee M. et al., Stereoisomeric specificity and soil gas disequilibria...

p.6 discussion. I don't follow why the authors are surprised to find the results they did. They were empirically anticipated in ref. 5; and, theoretically, we have no information on the intensity of racemase action that would suggest that the rates of catabolism would be equalized thereby. The basic interest of this paper is in the exhibition of another, and in some respects simpler, method than in (5) for detecting metabolic activity of soil; and I suspect readers of Applied Microbiology would prefer to see a more detailed analysis of the respective methodologies, their strengths, weaknesses, and reliabilities, than this belaboring of the obvious. I do not know how interested this audience will be in detailed discussions of policies for exobiological research. Surely they would like to hear more about possible applications in terrestrial contexts, although they could readily use their own imagination therefore. The paper would be of great interest, as written, for Space Life Sciences or a similar journal; for the present vehicle, I would some thought be given to revision for the actual readership of Applied Microbiology, which should not be difficult/

The statistical analysis on which much of the argument rests is not fully explained except by reference to a computer program not available to the reviewer. Without knowing more clearly just how the .99 confidence limits were calculated, it is not possible to verify the authors' assertions. This may be more than needs to be in the final paper; but a professional statistician should have access to these additional details for review purposes.

p.5 Did the authors make their own determination of the viable bacterial count in the Antarctic soil sample? Perhaps it should also be pointed out that there was surely substantial proliferation during the incubation period.

Fig 1. Is there any explanation for the decreases observed at day 5? Are they "statistically significant"?

Further comment from a colleague:

I would like to know more about the gas measurements (p.3). What were the relative strengths of the signals? reproducibility? How were the gas samples transferred to the spectrometer?

Low resolution rapid scans were used. How rapid? Rapid scans will introduce ion statistical errors especially in the weak signals. When were HRMS scans necessary? To which data do they contribute?

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