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Introduction

Tardigrades have always been interesting microorganisms in terms of their fortitude in space, and sharing this interest, our experiment sought to see if *Hypsibius* tardigrades would be able to survive and glow after ingesting fluorescent microplastic. This would allow us to determine if further applications in testing them with microplastics under microgravity might be applicable. To do this, we put fluorescent microplastic in with the water they resided in. Our results were indeterminate, as we were unable to see any glowing in the tardigrades. We did, however, observe that rotifers were ingesting the plastic and glowing.

Hypothesis

From data in the past surrounding a similar experiment with brine shrimp, we asserted that the tardigrades would likely digest the microplastic and glow in a thin line through their digestive tract, in the same way the brine shrimp did.

Methods

- Aerate the container with pipette weekly
- Put 4 grams of microplastic in container with tardigrades and algae
- Observe under light microscope every week, make sure they're alive and if they're glowing
- Feed 1mL of algae every week

Results

We were unable to see any evidence of the tardigrades consuming the microplastics or of their digestive tracts glowing. We were able to see multiple rotifers' stomachs glowing under the UV light. The brine shrimp did glow, as expected.



Figure 1. Setting up materials and checking under microscopes

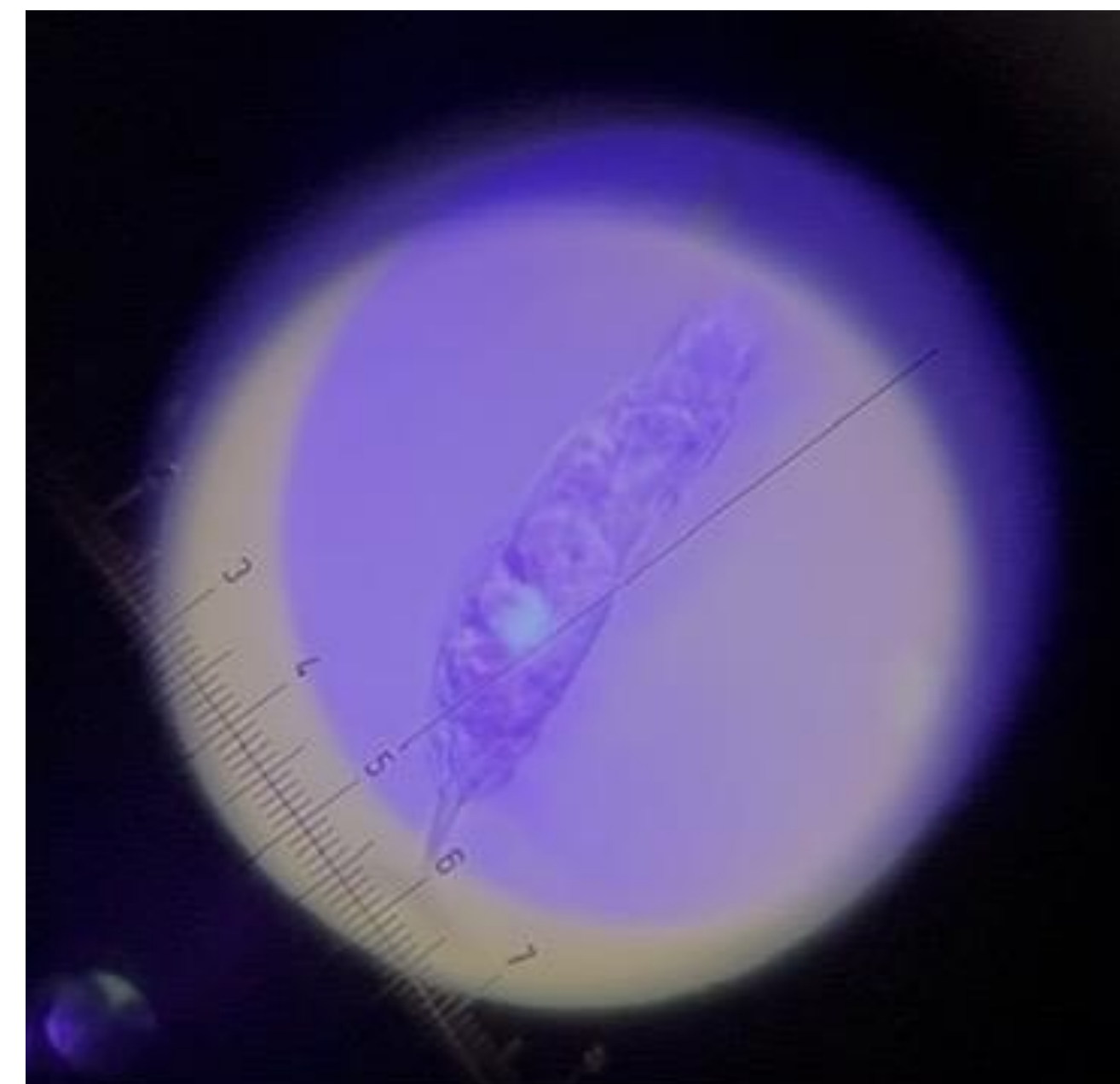


Figure 2. Image of rotifer glowing

Results (continued)

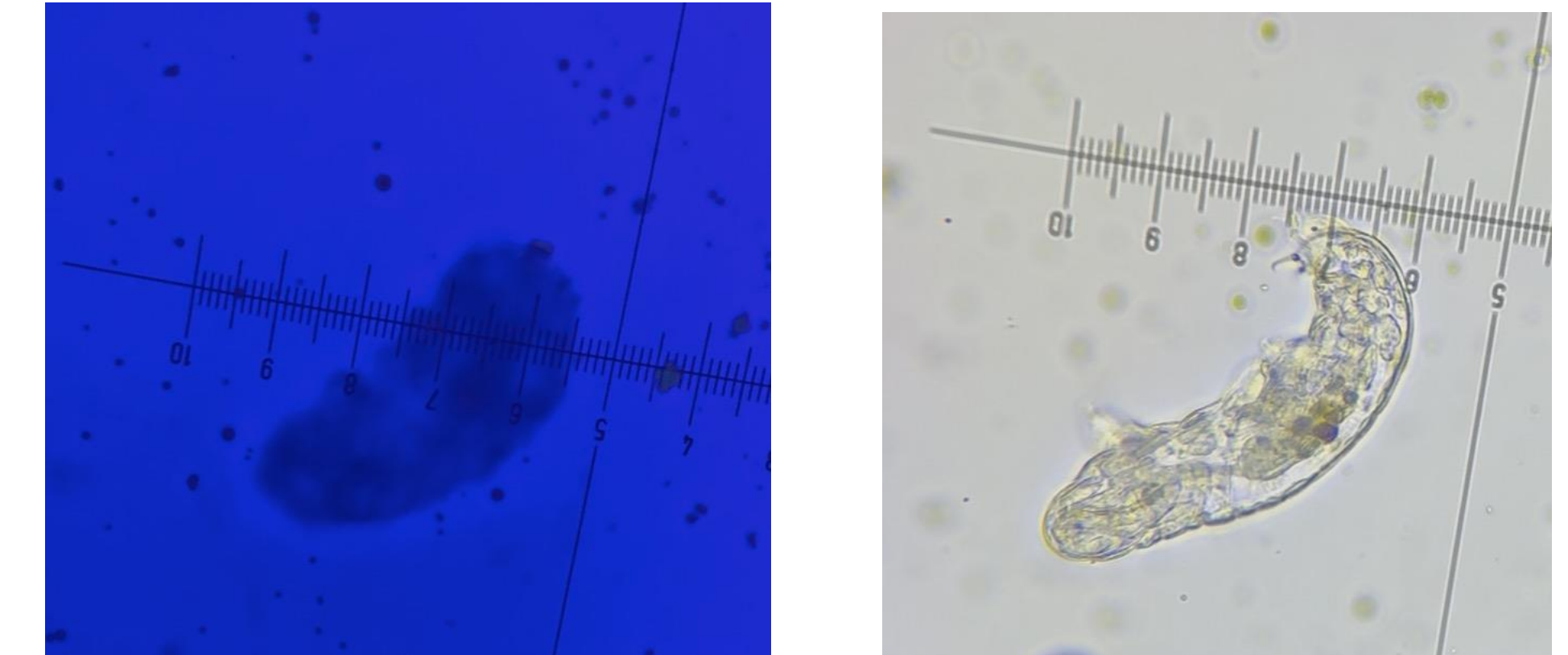


Figure 3. Images of tardigrades not glowing

Discussion

While the tardigrades did not consume the plastic, multiple rotifers in the culture did, and were glowing. We think it could be interesting to investigate this further in the future, as well as the potential uses for this. We think the idea that tardigrades can survive in space can have a lot of avenues to go down with potential uses for them. However, we do not believe this model to be adequate evidence to support testing tardigrades with fluorescent microplastic and might suggest a different form of microplastic were this to be replicated in the future. We think there could be a lot more uses for tardigrades when it comes to space, and with our results concerning the rotifers, they may be a more convincing subject for space-bound microplastic applications.

References