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Cleaning Chemicals from the Environment Utilizing Mycoremediation: The Capacity of Three Fungi Species to Intercept Perfluorooctanoic Acid

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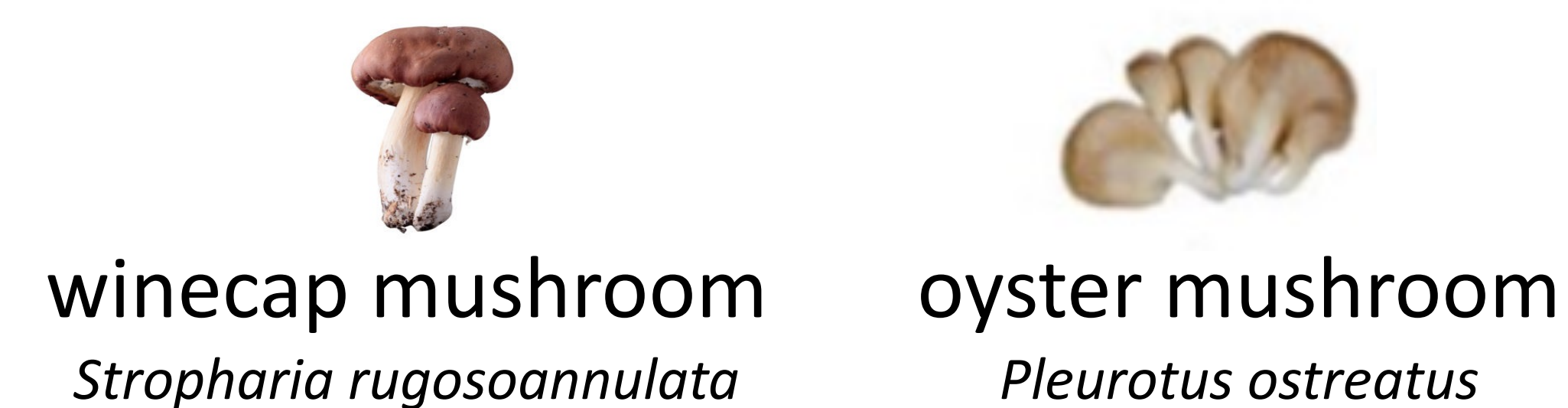
Cleaning the forever chemicals from the environment utilizing fungi

Mary Campbell, Jessica Hua (Biology Dept), Yuxin Wang (Environmental Studies Dept), George Meindl (Environmental Studies Dept)

Introduction

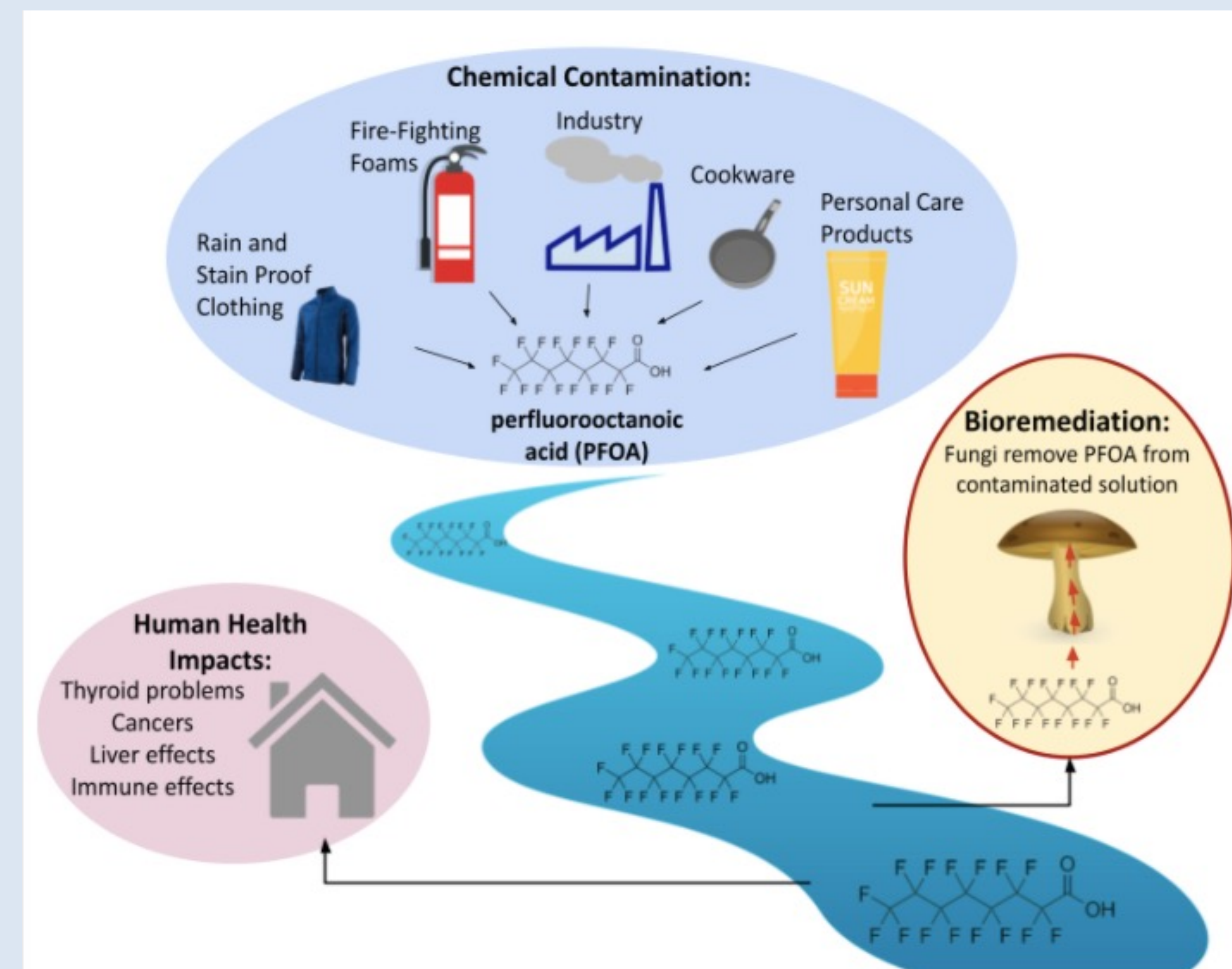
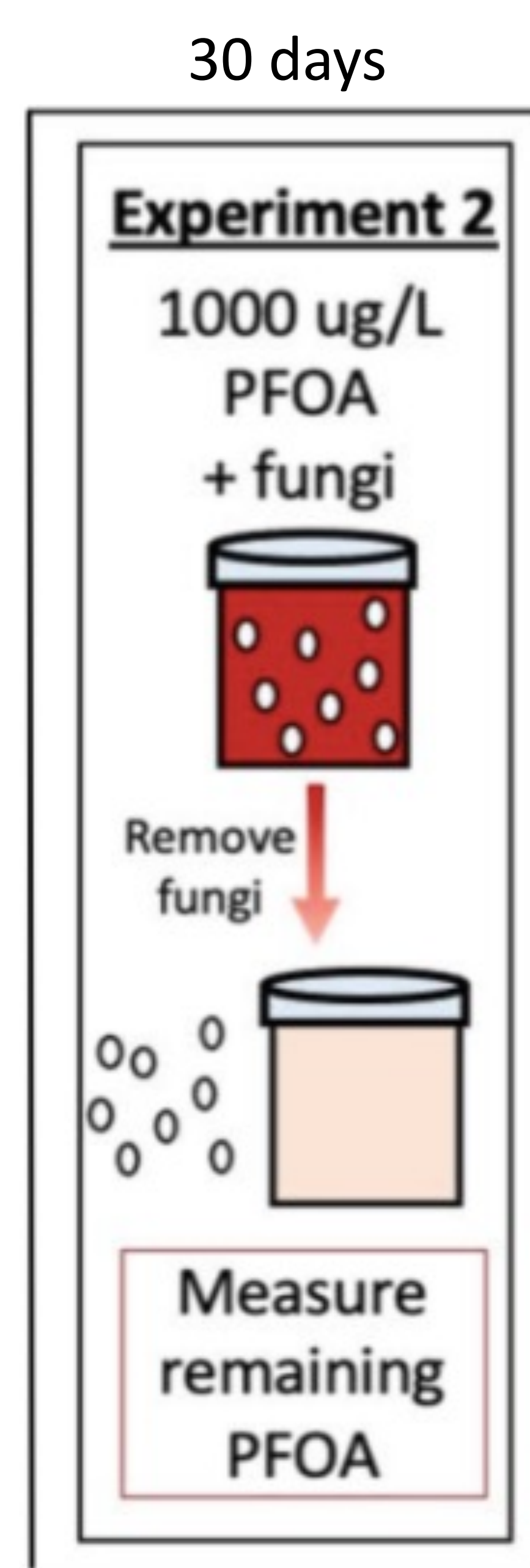
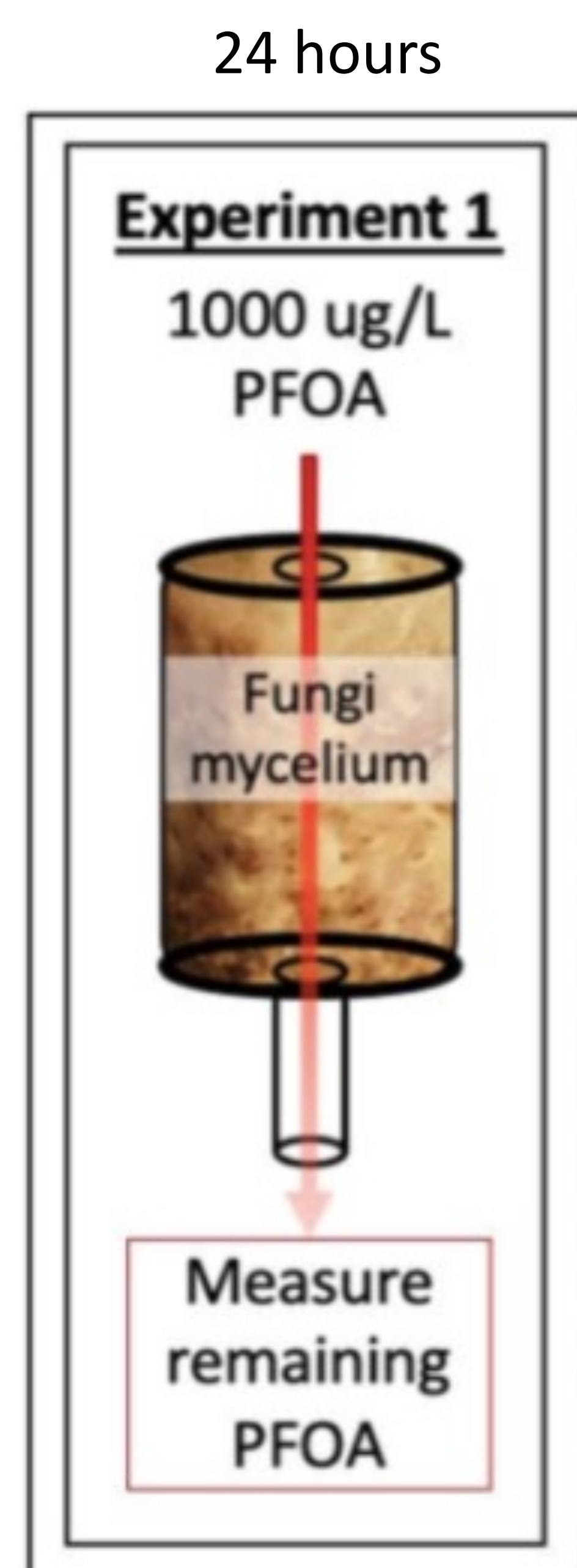
- Perfluorooctanoic acid (PFOA), known as the forever chemical, is highly resistant to degradation in the environment and present in drinking water^{1,2}
- PFOA is known to cause a multitude of health problems²⁻⁵
- Fungi have well documented degradative properties and have been used for breaking down textile dyes, petroleum, heavy metals, etc.⁵

Study Species:



Question 1: Are fungi capable of **removing** environmentally relevant concentrations of PFOA from contaminated solution?

Question 2: Do fungi remove more PFOA over a **longer exposure** period?



Fungi are capable of cleaning contaminants from our environment by intercepting perfluorooctanoic acid: the “forever chemical”

Acknowledgements



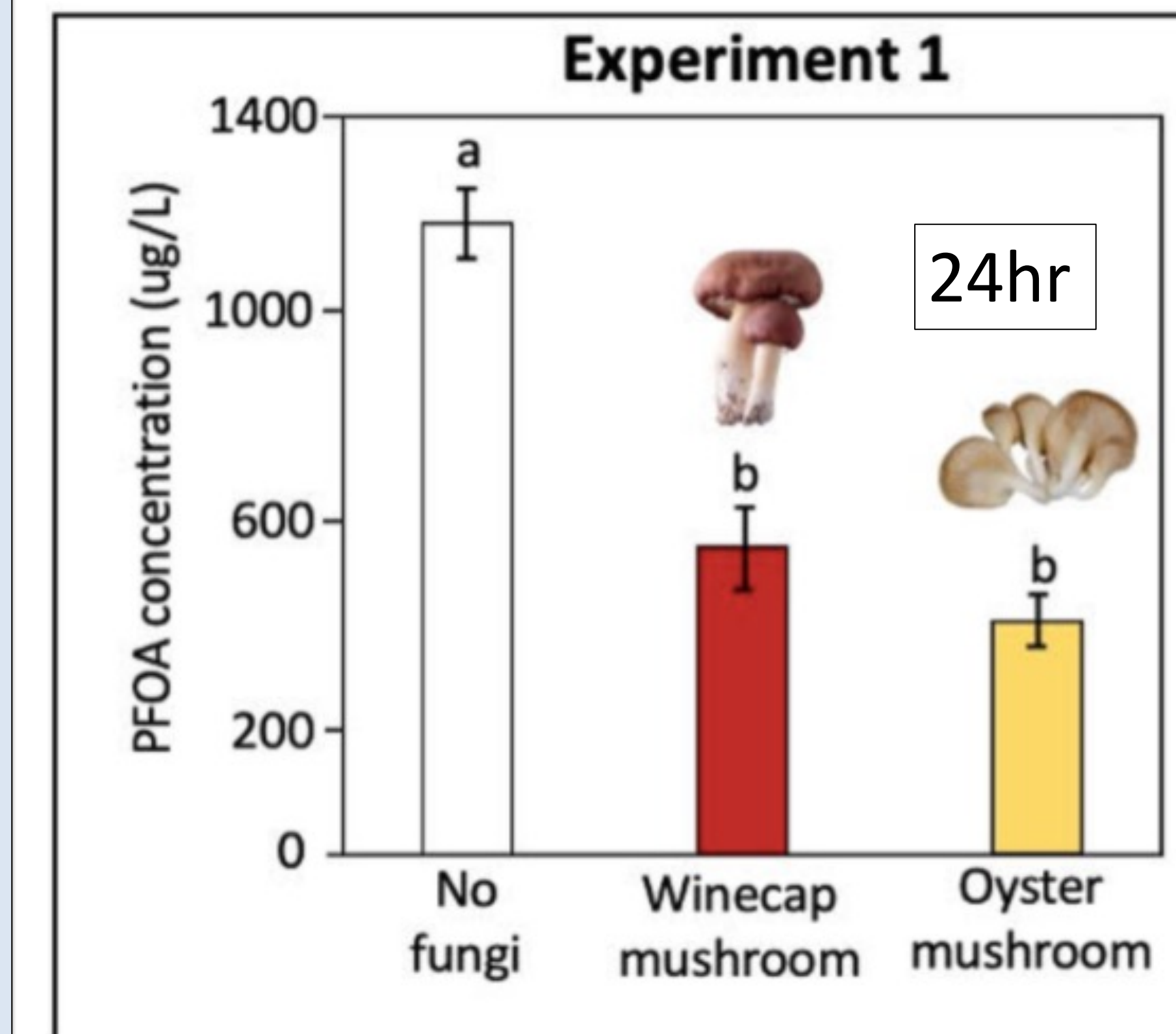
Thank you to the Summer Scholars and Artists Program, Dr. Jessica Hua, Dr. George Meindl, Dr. Yuxin Wang, Dr. Christopher Smyth, the National Science Foundation, and the Hua Lab.



References

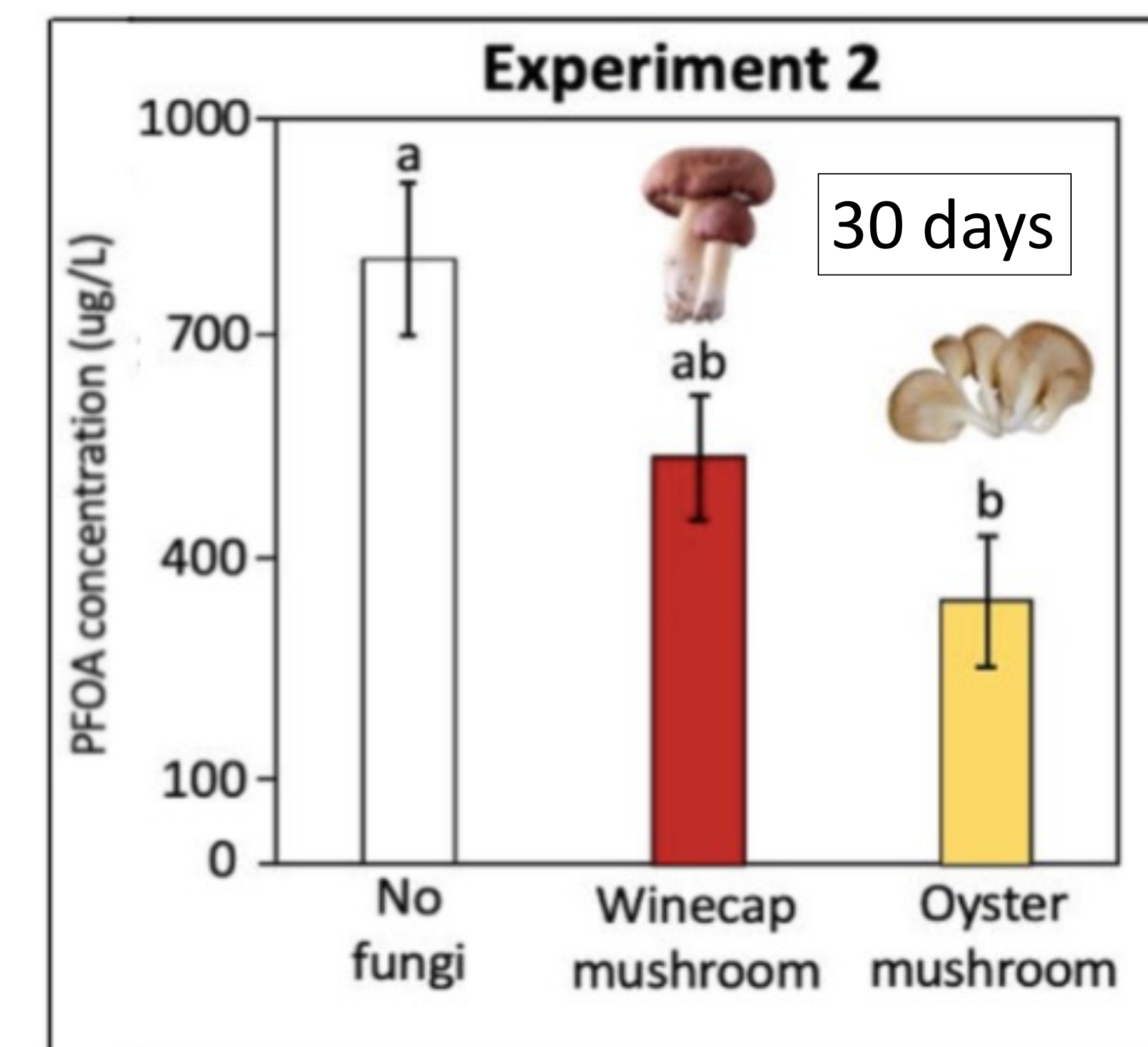


Results



Question 1: The winecap and oyster mushrooms significantly removed PFOA when placed in contaminated solution over 24 hours.

Question 2: The oyster mushroom significantly removed PFOA when grown in contaminated solution over 30 days.



Conclusions

- Both the winecap and oyster mushrooms **significantly remove PFOA** from contaminated solution, and increased contact time does not appear to influence removal
- After 30 days in liquid media, oyster mushrooms significantly removed PFOA compared to winecap mushrooms
- Fungi are a **cost effective** and **non-toxic** means of remediating PFOA contamination
- Future work: processing data from longer term exposure of fungi to PFOA