5/2/2023

Advertisement for OrION internship at Oregon State University titled: **Investigating the chemistry and biophysics of UV-resistance in fungi to inform bio-inspired protective films for space exploration** for the summer term 2023.

The Oregon State University Biodeterioration Laboratory is initiating a research project to investigate the chemical and biophysical basis of UV light tolerance in *Aureobasidium* yeasts and other dark pigmented fungi. These pigmented yeasts are commonly found growing in polysaccharide-rich biofilms on building products or inorganic substrates in nature where they are often exposed to large temperature fluctuations and high levels of ultraviolet light. Despite the harsh conditions these fungi are able to survive and prevent their DNA from degrading in the presence of high levels of ultraviolet radiation. They are utilizing a combination of fungal polysaccharides and melanins to protect themselves, but the biophysical associations these components make with one another to form a protective matrix is not known. Understanding how this biological system functions to protect these microbes from high levels of UV radiation can help inform bio-inspired protective films that could be used for the protective of equipment and personnel involved in space exploration.

The objective of this internship is to help identify the chemical and biophysical basis for UV tolerance in dark pigmented fungi. The intern will do this by using a combination of analytical and microscopic techniques to analyze the physical associations melanins share with the fungal cell wall and polysaccharide sheath. The intern will gain competency in a variety of common laboratory techniques in microbiology and analytical chemistry. These include aseptic technique, fungal culture isolation, making microbiological media, DNA extraction, chemical extraction of cell cultures, various types of chromatography, light microscopy and electron microscopy.

This is a full-time, 10-week internship for 40 hrs per week for a total of 400 hours to be carried out in the summer. The work will be done principally in the laboratory in person. The intern will be responsible for planning, preparing, and executing experiments toward the completion of the above objective in consultation with the P.I. and laboratory manager. The intern will be expected to keep detailed laboratory notes and learn common methodologies for data management and analysis. The intern will maintain a regular work schedule so the PI and supervising scientists will know when to expect the intern to be present in the lab. The intern will be expected to report to the PI with monthly progress reports that include data summaries and a description of research activities. The intern will be expected to present their research to the P.I.’s laboratory group at least once during the internship. The intern will synthesize data and compile methods into a final report presented to the P.I. at the end of the internship period.

The intern will be funded through a stipend of $7,300 paid directly to the intern. The funds are distributed in two installments, 2/3 at the start of the internship and 1/3 after the intern presents a final report in November of 2023. The final report will require the intern to create and present a poster describing their research results at the Orion research symposium. The intern does not need to be enrolled in credits to qualify for the internship but must be pursuing a degree or is a graduating senior.

 Student eligibility information can be found here: <https://spacegrant.oregonstate.edu/orion-faculty-information>

The internship opportunity and application can be found here: <https://spacegrant.oregonstate.edu/orion>

Questions about the internship application process can be directed to Meghan Megowan; meghan.megowan@oregonstate.edu

Questions about the internship subject matter can be directed to Gerald Presley gerald.presley@oregonstate.edu