

Camouflage, Biomimicry, and the Development of Global Educational Resources
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INTRODUCTION

The purpose of this internship was to broaden exposure of K-12 students to investigative science instrumentation in order to increase the understanding and appreciation of STEM. Educational materials were developed around the equipment at the University Instrumentation Center (UIC) at the University of New Hampshire. The muse for the curriculum was marine squid and their ability to camouflage. Squid tissue containing camouflage pigments was analyzed using SEM, TEM, UV-VIS, and NMR in order to elucidate the mechanism behind the biomimicry. The final product is an online curriculum that consists of a series of videos, presentations, activities and projects that combine chemistry, biology, biochemistry, and earth science topics and the relevant instrumentation at the UIC.

METHOD

Squid chromatophores were dissected in order to see what molecules and pigments contribute to coloration. Chromatophores are pigment sacs that populate the squid skin. They contain hundreds-thousands of nano spherical pigment granules. Using the machines at the UIC, more information was able to be contained about the granules and how they contribute to color change, and made understanding the chemical components of the squid possible.



RESULTS

Still under production. Piloting to begin this fall.



CONCLUSIONS

Having a common sample, squid tissue, chromatophores, pigment granules, etc., helped to give a basic understanding of the use of these machines. The common sample helped to align the knowledge gained from the instruments with high school science classes, to make for interactive online labs.

FUTURE DIRECTIONS

Future directions include an interactive website where students can learn how to properly use the machines, with pictures and examples of samples put into the machines.

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