



SPRING 2021

**Biochemistry and Molecular Biology
Brown Bag Series**

Alex Compean

M.S. Student

***“Tyrosine halogenation for adding
functionality to biomaterials”***

Tuesday, March 16, 2021

11:00 AM

**Please contact x3249 if you would like to attend but
did not receive an emailed link.**

Lab: Patrick Dennis, Ph.D.



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Abstract

Tyrosine halogenation for adding functionality to biomaterials

Nature has acquired a vast repertoire of catalytic functionality and with halogen atoms abundant in the biosphere, organisms have evolved to make these atoms useful in various ways. Exploiting this ability has created new and useful materials that effect our everyday lives. Enzymes have relevance where current production routes are lacking; they have the ability to improve product yield, materials price, supply chain security and/or environmental waste accumulation. This work aims to develop platforms for generating new biomaterials that could have biomedical and industrial relevance with tailorable properties. As a starting point, we are investigating the halogenation of a known useful biomaterial, silk fibroin, from the silkworm, *Bombyx mori*. While several classes of halogenases have been examined for the ability to install halogen atoms into carbon frameworks, our presented work highlights one class of enzymes, the vanadium-dependent haloperoxidase, which displays a reactivity profile consistent with electrophilic aromatic substitution, change in material properties, and ease of recombinant expression and purification. We hope to eventually explore the usefulness of the carbon to halogen bond (C-X) as a means of adding more functionality through coupling of a fluorophore to the halogenated silk fibroin.