

THE PURDUE LECTURE HALL SERIES

Purdue University

May 6, 2021 at 2:30 pm

Zoom: <https://purdue-edu.zoom.us/j/94578251499?pwd=aEVyYWV5Z0F0czJ0aCtSbEIBRXo1UT09&from=addon>

Topic: Using a Biophysics Tool to solve a Microbiology Problem
Guest Speaker: Claire Overly, PhD candidate, Department of Biological Sciences

X-ray crystallography is a biophysical technique that has been used to solve biological problems for decades, including the iconic double-helix structure of DNA. More than 100,000 protein structures have been solved using X-ray crystallography, which involves crystallizing the molecule of interest and shooting it with X-rays. Analyzing the resulting diffraction pattern gives researchers a molecular "snapshot" of what the protein looks like, which provides clues to how the protein works.

I work in a lab that uses X-ray crystallography to study proteins from antibiotic-resistant bacteria in order to find new ways to fight these drug-resistant infections.

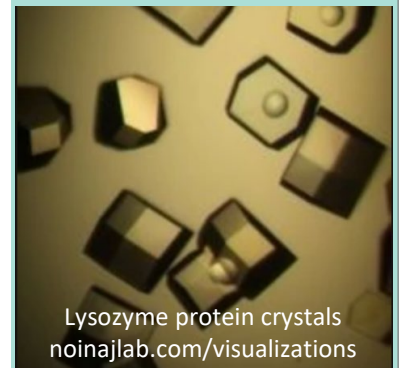
Specifically, I work on a protein called BamA in an organism called *Fusobacterium nucleatum*. This bacterium lives in human oral cavities and causes oral infections, but it is also linked to the development of colorectal cancer. BamA is an important drug target because it helps fold and position other proteins on the surface of *F. nucleatum* that further its pathogenesis.

Using X-ray crystallography to solve the structure and study the function of BamA in *F. nucleatum* provides the basis for therapeutics for an organism that influences both oral infections and cancer development. Additionally, this research gives additional insight into how bacteria fold and insert proteins onto their surfaces, which leads to the possibility of better antibiotics in the future.

Background: Claire is a third-year PhD candidate in the Department of Biological Sciences at Purdue University. A native of sunny South Carolina, she completed her undergraduate studies in Biochemistry and Molecular Biology at Bob Jones University in Greenville, SC. She began her PhD in Microbiology, Immunology, and Infectious Disease at Purdue in August of 2018.



Claire Overly,
PhD Candidate



Lysozyme protein crystals
noinajlab.com/visualizations

