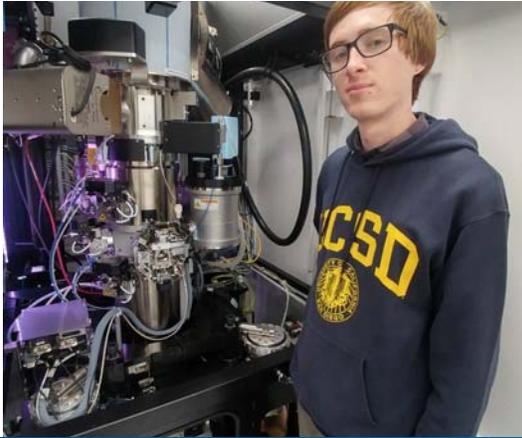


BIOCHEMISTRY SEMINAR SERIES

Midstream Presentation - Fall 2020

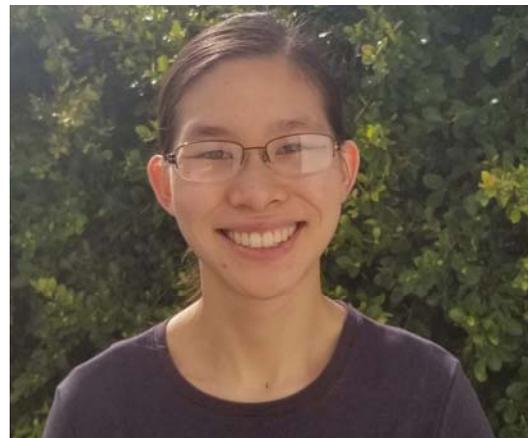


“The Development of an Imaging Scaffold for RNA Structural Analysis via Cryo-EM”

...
Matthew Agdanowski
Yeates Group

In recent years there has been an explosion in the discovery of RNA molecules with interesting properties and functions once thought to be reserved to the realm of proteins. Structural studies involving RNA have historically proven challenging however. Recent breakthroughs in electron microscopy may be able to provide a unique solution to this long-standing problem. This growing technique, however, is unable to achieve the same quality of results when applied to single macromolecules. Our lab has recently developed a method to circumvent this problem and image single proteins using single particle cryo-EM by engineering a symmetrical protein scaffold onto which various imaging targets can be docked. My goal is to extend this scaffolding technology to studying the ever-increasing catalog of novel RNA molecules at atomic detail. I believe the knowledge gained from this endeavour may provide unique insights into the biochemical function of these molecules as well as provide researchers a tool to overcome potential roadblocks in their research.

“Targeting acyl-lysine modifications in the *Rhodopseudomonas palustris* proteome via diagnostic ions”



...
Janine Fu
Loo Group

Post-translational modification (PTM) is a conserved strategy used to efficiently control biological mechanisms in response to changing cellular environments. One type of modification, lysine acylation, is known for its role in epigenetics but more recently has been implicated in metabolic pathways across many systems. Previous studies have established that these PTMs alter the activities of metabolic enzymes, highlighting the relationship between protein acylation and metabolic regulation. Here, we investigate the metabolically versatile α -proteobacterium *Rhodopseudomonas palustris* proteome, focusing on identifying acyl-PTMs across this microbe's diverse metabolic modes and correlating its metabolic regulation with protein acylation. To further improve current mass spectrometry approaches (LC-MS/MS), we recently developed a new method for more confident targeting of acyl modifications by utilizing unique diagnostic ions that arise from these PTMs. Using this new proteomic technique, we have characterized acyl-PTMs beyond acetylation and have identified other acyl modifications that have not been found before in *R. palustris*.

Tuesday, November 3, 2020

via Zoom

4:00 pm