BCHM PhD Me

Be a CU Boulder Biochemistry PhD

MY DISSERTATION & THE POTENTIAL OUTCOMES

My primary research focus was genome organization in mitochondria. I became interested in this topic because there were many unanswered questions about mitochondrial DNA organization, despite this process being extremely important for overall cell health. I was especially interested in this system because many unknowns could be answered using simple biochemical methods. I showed that TFAM, the protein responsible for packaging mitochondrial DNA, forms homogenous higher order complexes on DNA that exhibit microscale conformational dynamics. These dynamics may be a method of regulating access to the mitochondrial genome which is essential for cellular energy production.

I also worked on two other projects investigating histone-mediated genome organization in bacteria and giant viruses. In this work, I characterized three different mechanisms of DNA packaging, highlighting the diverse strategies adopted by these small but versatile proteins. Together, my work in graduate school characterized the fundamental process of genome organization across the domains of life, contributing to the quest to understand the origins of the eukaryotic nucleus.

I hope that I leave this experience as a highly skilling, rigorous scientist that is an expert in my field.

WHERE I'M HEADED POST DOCTORAL STUDIES

I anticipate changes to my research focus as I move forward. I would like to learn cryogenic electron tomography to expand my skillset as a structural biologist and to study cellular processes in their native state. I'm excited to explore new organisms and mechanisms that I'm yet to come across; there are so many interesting questions out there.

WHY I SELECTED CU BOULDER

I chose the CU Boulder Department of Biochemistry for graduate school because of its collaborative culture, the well-equipped facilities available to students and the many highly active research labs. Outside of the lab, I enjoy hiking, skiing, swimming and playing water polo.

SASHI WEERAWARANA

COLOMBO, SRI LANKA

Luger Lab

PhD 2026: Biochemistry

2025:
Biochemistry Outstanding Teaching Award

2026:
Summer Research Assistant

BSc, University of Massachusetts Amherst

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