2025 UDP Scholarship Recipient

Margaret Walker
College of Natural Sciences

Research

Margaret's thesis project is focused on using the fundamental chemistry of unnatural amino acids to create a new class of enzymes. Specifically, her research proposes to introduce halogen bonding as a chemical catalyst in the active site in a protein. The halogen bond is a nontraditional noncovalent interaction that is similar to a hydrogen bond, but with a halogen, such as iodine or chlorine replacing the chemical function of the hydrogen. This new class of catalyst offers a novel and innovative chemical tool for use in protein engineering. Margaret is immensely interested in the relationship between protein structure and function, and the use of both computational and experimental methods to address questions in this field.

Biography

Margaret Walker is a PhD candidate in the Department of Biochemistry and Molecular Biology in the Ho lab studying structural biology at Colorado State University. Originally from northern Virginia, she was inspired to pursue science by the innovation and creativity behind federal research completed by her dad and others in the DC metro area. Specifically, the research completed in biodefense for soldier and civilian protection and disaster prevention ignited her pursuit of a career in the biosciences.

Margaret received her Bachelor of Science in Biochemistry at Virginia Polytechnic Institute and State University in 2021 where she received the R. W. & Frances H. Engel Scholarship from the Department of Biochemistry. While at Virginia Tech, she contributed to founding a chapter of Alpha Sigma Kappa: Women in Technical studies sorority to foster community and support amongst women in STEM. Additionally, she had the opportunity to intern as an ORISE Goodwill Ambassador at the Air Force Research Lab in the 711th Human Performance Wing where she discovered a passion for biochemical research.

During her PhD, Margaret has received the Professor Parviz Azari fellowship and the Mauricio X. Zuber Memorial Award from the Department of Biochemistry and Molecular Biology, as well as the *CrystEngComm* poster prize at the 6th International Symposium for Halogen Bonding. Her work in the Ho lab has led to two publications and she plans to graduate in a year. After graduation, Margaret hopes to continue studying the relationship between structure and function in protein design in biotech industry or biodefense federal research labs.