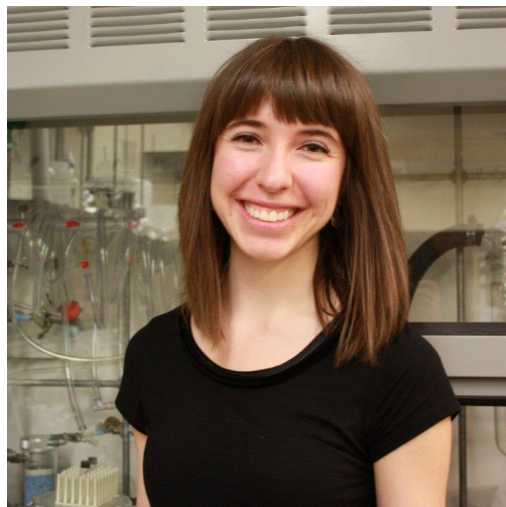


2014 Iota Sigma Pi Anna Louise Hoffman Award for Outstanding Achievement in Graduate Research

Elizabeth Nancy Bess



Ms. Elizabeth Bess is an outstanding graduate student in the Chemistry Department at the University of Utah. Working with Dr. Matthew Sigman, Elizabeth is pursuing a line of inquiry to understand the mechanisms and forces that govern enantio- and site-selective chemical reactions. Elizabeth co-authored her first paper, in *Nature Chemistry* (2012, 4, 366), as a result of work accomplished as a first year graduate student in the Sigman lab involving the evaluation of steric parameters. Since then, her work has been featured and reported in a number of other publications, including *Organic Letters* and *Angewandte Chemie*. One of her most recent papers, which uses IR-vibration mode data to predict the enantio- and site-selective outcomes of a variety of reactions, has recently been published in *Nature* (507, 210-214.). Elizabeth is interested in applying an understanding of the features that govern selectivity in reaction mechanisms to the directed evolution of enzymes. To that end, Elizabeth will be collaborating with Novartis in Switzerland this summer to learn research techniques for pursuing directed evolution. Dr. Sigman writes, "This is exceptionally unusual in our field for someone to both propose a new idea and get an opportunity to execute a collaboration with a pharmaceutical company based on their original idea... Elizabeth has diverse interests and, clearly, thinks about problems in creative and pragmatic ways." Dr. Jennifer Heemstra, a member of Elizabeth's thesis committee, agrees, describing Elizabeth's academic endeavors as "very impressive ... she identified a very high-impact problem, and constructed an innovative, yet feasible, approach." Elizabeth has been recognized with several awards, including the University of Utah's Dow Chemical First Year Award and a poster award from IUPAC. Elizabeth's most recent research project applies her modeling skills and her understanding of structure-activity relationships to elucidate the origin of site-selectivity in Rh-catalyzed C-H amination reactions. According to Sigman, Elizabeth has been a driver of this work, which has resulted in models that not only predict the performance of over 20 nitrene sources but also allow the prediction of the best-performing nitrene in terms of site-selectivity. This work, in collaboration with the Du Bois group at Stanford, has recently been accepted for publication in the *Journal of the American Chemical Society* (doi: 10.1021/ja5015508) and has spawned new collaborations with colleagues at Emory University. Elizabeth aims to pursue a career in academia, for which both Heemstra and Sigman believe she well suited.