Many marine host-pathogen systems are poorly understood, and even less is known about how global climate change will alter the transmission and impact of these pathogens. As part of my Fulbright research, I have been studying marine mutualisms, and am interested in expanding my research questions to parasitism and its large influence on biodiversity. The "Climate Variability Hypothesis," proposes that extreme climate events are advantageous for parasites because they are smaller and have faster metabolisms than their hosts; thus, they can acclimatize to environmental changes more quickly. Most predictions of host-parasite responses to climate change have focused on mean temperature changes (which may be modest), even though there is strong evidence suggesting that the increasing frequency of climatic extremes can greatly alter these predictions. Of particular interest is a rickettsiales-like organism (RLO), which causes a chronic wasting disease called withering syndrome (WS) in the already endangered black abalone.

My goal is to discern how climate-change driven temperature extremes will affect these species. To do this I will use a model snail species, *Cerithidea californica*, and a trematode gut-parasite. My hypotheses are (1) Parasite nutrient assimilation, ascertained via carbon and nitrogen stable isotope ratios, will directly reflect the host tissue on which the parasite feeds; and (2) the host-parasite systems will experience higher infection intensity and faster nutrient turnover in response to variable temperature increases than to mean increases. To test these hypotheses, I will use stable isotope and standard parasitological methods. Isotopic turnover will be measured in diet between snail parasites and trematodes, and changes to these nutritional interactions will be monitored in response to variable and increased temperature treatments. This will be one of the first studies of nutrient assimilation with stable isotopes in these species. I will then apply this efficacious methodology to WS. Black abalone have a 95% risk of extinction within the next 3 decades, so a better understanding of how their infectious agents respond to climate change is paramount to saving this species. My dataset will be used to generate predictive models of infectious agents to climate change, which is also important for national defense and within the role of the DoD. In addition, protecting natural resources is crucial to the government-wide management initiative of promoting sustainability.

Ultimately, my career goals are: (1) to become faculty at a university and study how global climate change alters marine ecology and ecosystem structure; (2) to use these and other results to inform policy; and (3) to promote science education at middle-school and high-school levels by direct interaction with students and teachers. To this end, I will be joining outreach projects at 2 local middle and high schools to help promote scientific education and engagement.