UNIVERSITY OF CALIFORNIA MERCED | School of Natural Sciences

Quantitative & Systems Biology
Ph.D. Dissertation Defense
Candidate: Sabah Ul-Hasan

The utility of marine snail *Californiconus californicus* as a model system for venom microbiome research

Date:

Friday
May 17th, 2019

Time:

10:30am – 11:30pm

Location:

SSM 104

Abstract:

Toxin-producing animals comprise approximately 15% of all animal biodiversity. Venom, a combination of one or more toxins typically delivered by injection, is a known reservoir of novel natural products. Culture-dependent and -independent studies on the microbial communities in venom and venom-producing glands reveal the presence of archaea, algae, bacteria, endoparasites, fungi, protozoa, and/or viruses in these microenvironments. Venom-centric microbiome studies are comparatively sparse to date, and the adaptive advantages that venom-associated microbes might offer to their hosts, or that hosts might provide to venom-associated microbes, remain largely unknown. This work contributes to (1) an ecological framework for neogastropod *Californiconus californicus* as a first venom-microbe model system, within and outside of the laboratory, and (2) an initial assessment of the core venom microbiome for this species through 16S and 18S amplicon sequencing of the venom, tissues, and surrounding environment across time and space. Current findings identify stable populations for sampling and conducting natural experiments along the species range, new insight into predator-prey dynamics through the investigation of morphological records dating back to the Pleistocene, microbial communities of the seawater and sediment environment types within designated sampling sites, and that the *C. californicus* venom microbiome is distinct from other tissues of the host with localization along the gland that may be correlated to protein and/or metabolite activity in the venom microenvironment. This research is part of the interdisciplinary Initiative for Venom Associated Microbes and Parasites, aimed to demonstrate the significance of mutualism as a scientific practice. For more information visit https://sabahzero.github.io/ivamp.

Bio:

Sabah Ul-Hasan grew up in Salt Lake City, completing B.S. degrees in Biology, Chemistry, and Environmental & Sustainability Studies at the University of Utah and going on to complete an M.S. in Biochemistry at the University of New Hampshire. Sabah is a firm believer that food is the universal language, a constant theme in their science journey. Sabah will start a position in applied bioinformatics at The Scripps Research Institute later this year, with long-term career interests to be a kinder human than yesterday.

More Information:

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