

RISE Program

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Understanding the mechanism behind *V. fischeri* oxidative stress response

The Hawaiian bobtail squid, *Euprymna scolopes*, forms a beneficial symbiosis with the bioluminescent marine bacterium *Vibrio fischeri*. On one hand the squid provides a safe niche for *V. fischeri*, and on the other the squid utilizes the bacterial bioluminescence as a camouflage mechanism. Interestingly, *V. fischeri* is the only microorganism known to colonize the squid's light organ. The host generates reactive oxygen species (ROS) upon detection of the bacteria, creating an oxidative environment. In response, *V. fischeri* produces high levels of oxidative stress response proteins, during symbiosis. The overall goal of our laboratory is to study the molecular mechanisms behind *V. fischeri* adaptation and colonization of the host's light organ. So far, I have contributed to this goal by studying peroxidase gene expression in different mutant backgrounds and growth phases of *V. fischeri*, under different levels of oxidative stress. Our results suggest that *ahpC* is necessary under oxidative stress conditions. Now we will focus on studying the expression of other oxidative response genes in additional *V. fischeri* mutant backgrounds to further understand which genes are responsible for helping *V. fischeri* combat the oxidative environment inside the squid.