Determining If Bacterial Genera Found in Natural Bat Roosts Are Known Fungal Inhibitors of Pseudogymnoascus destructans (Pd) (Y7)

Carpenter, Calvin (School: All Saints Episcopal High School)

Bats, like bees, are a keystone species benefiting the environment and saving farmers billions of dollars in chemicals. However, since 2006, millions of bats in North America have died of a disease called White-Nose Syndrome (WNS) caused by a deadly fungus, Pseudogymnoascus destructans (Pd). This cold-loving fungus wakes bats in the wintertime when there is little food. The bats become weak, starve and die. In 2017 caves in the Texas Panhandle, specifically King County and Cottle County, Texas, tested positive for the fungus, and in the winter of 2021, WNS was confirmed. Scientists are exploring natural ways to mitigate the fungus and have identified different bacterial inhibitors. The purpose of this project is to collect and identify natural-occurring bacteria in King County for known bacterial inhibitors of Pseudogymnoascus destructans (Pd). Samples were collected in wintertime from organisms found in potential bat roosts and/or hibernacula locations. Morphological and biochemical tests were performed on twenty-two isolates. Examples of tests that were performed are: Gram Stain, MacConkey's Agar, Phenol Red Fermentation (Sucrose, Lactose, Glucose), Catalase, Starch Hydrolysis, Casein Hydrolysis, and Amino Acid Decarboxylase Tests. Six samples were identified as fungus. Four samples were identified and are known inhibitors. Five samples were identified, but not known if they inhibit Pseudogymnoascus destructans (Pd). And, seven samples were inconclusive and not identified. Identifying natural inhibitors from local environments may be a resource in developing ways to mitigate the threats caused by the fungus.

Awards Won:
Fourth Award of $500