



Improving Methods for Studying White-Nose Syndrome in Bats

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Result: Researchers design new tools to study white-nose syndrome in bats

White-nose syndrome is a devastating disease of North American bats caused by the fungus *Pseudogymnoascus destructans*. Since its discovery in a New York cave in 2006, the disease has spread rapidly to 25 states and five Canadian provinces. The disease affects most hibernating bat species and mortality rates are high – up to 97 percent in some contaminated caves.

While recent Morris Animal Foundation-funded studies have helped researchers better understand the dynamics of the disease, no proven management or intervention strategies exist to stop the spread of white-nose syndrome. To help close this knowledge gap, foundation-funded fellow Dr. Barbara Shock and colleagues at University of California, Davis, looked at methods to optimize the growth and maintenance of cultures of *P. destructans* in the laboratory. This critical step is needed to study the disease process and test potential treatments.

In partnership with the Biomedical Engineering Department, the research team developed a minimally invasive wing-punch biopsy tool. Bat-wing tissue is extremely thin, and this new, easy-to-use tool is safe and minimizes handling of bats in the field. Tissue biopsies are used for genetic studies and to diagnose infections of not only white-nose syndrome, but other bat pathogens as well.

In the laboratory, the researchers used the skin biopsies to develop an explant model (live-tissue culture) to study the natural history of the fungus in various bat species. Researchers were able to keep the bat tissue alive in culture at least 15 days post-harvest, which enabled them to study the fungus under varying temperatures and humidity to simulate cave environments.

The results of this project provide valuable tools for the study and mitigation of white-nosed syndrome in bats. The explant chamber model can be used year-round to explore potential white-nose syndrome treatment options without the use of live animals. (D13ZO-414)