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Using Cave Bacteria to Inhibit *Pseudogymnoascus destructans*, the White Nose Pathogen

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Pseudogymnoascus destructans, the causative fungus of White Nose Syndrome (WNS), has rapidly spread across the world endangering many species of bats through accelerating their use of stored fuels during hibernation. Bats diagnosed with WNS have faced 100% mortality in caves, causing concern among scientists. In hopes of controlling this fungus, we are screening cave bacteria for antifungal compounds inhibitory to *P. destructans*. *Streptomyces*, a widely distributed genus of filamentous bacteria, have a long history of producing antibiotics. They have been known to synthesize a wide variety of our current day antibiotics (amphotericin, neomycin, etc.) and serve as a great discovery platform for new antibiotics. With this reasoning, we performed enrichments to isolate cave *Streptomyces*, amassing a library of over 500 individual strains. To screen for antibiotic activity, we tested our library against the yeast *Saccharomyces cerevisiae* and *P. destructans*. Strains giving the strongest inhibition were subjected to further analysis by mass spectrometry, chromatography and additional bioassays. Additionally, we are collaborating with the Doering Lab (Washington University) who has screened our antibiotic producing strains against *Cryptococcus neoformans*, a facultative intracellular pathogen that causes severe lung infections in humans. Within our library, we have found 58 *Streptomyces* strains that have produced antibiotic activity. Our strains have exhibited a wide range of activities from producing broad antibiotic activity to strains that have been more selective against *P. destructans*. Through our data, we are working to identify specific antibiotics compounds and find strain candidates that will control the spread of WNS.