

The Influence of Antimicrobial Peptides, Cutaneous Microbial Communities and Water Quality on The Susceptibility of Columbia Spotted Frogs (*Lithobates Luteiventris*) To Chytridiomycosis

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Chytridiomycosis is a potentially deadly skin disease found in amphibian populations all over the world. Chytridiomycosis is caused by the fungus *Batrachochytrium dendrobatidis* (Bd) that grows on the skin of amphibians. The fungus can cause a disruption in the homeostatic functions of the amphibian skin and can lead to death. The relationship between an amphibian's antimicrobial skin secretions, cutaneous microbial communities and environmental water quality can affect their resistance and susceptibility to Bd infection. Columbia spotted frogs (*Lithobates luteiventris*) are native to western Montana and have been affected by chytridiomycosis. Three lakes known to be positive for Bd were used as collection sites where a total of ten frogs were caught on three different occasions throughout the summer for a total of 90 collected samples. Each frog was swabbed for bacterial and fungal samples and placed in a solution that would collect antimicrobial peptides secreted from the frogs' skin. Water samples were collected at each site and analyses were performed to assess various parameters. Early results suggest that AMPs may affect the relative abundance of an important anti-fungal bacteria (Rhizobacta) which influenced Bd status. The goal of the ongoing research is to determine what parameters of environmental conditions, antimicrobial skin secretions, and cutaneous microbial communities allow Columbia spotted frogs to be resistant to chytridiomycosis in order to better predict and treat future outbreaks.