

Development of a non invasive method for measuring biochemical biomarkers on amphibians

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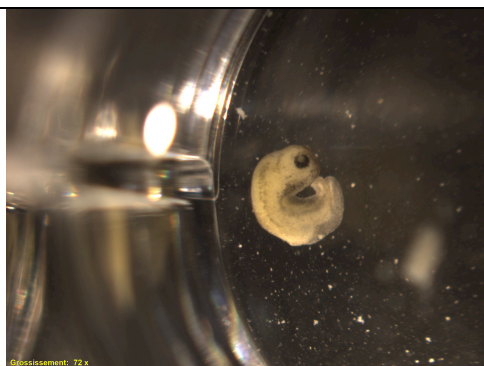
Context

According to the International Union for Conservation of Nature (IUCN, 2019), 40% of amphibians' species are endangered, which made this group the more threatened taxon within the vertebrates. Although habitat loss is the first threat to amphibians, anthropogenic pollution plays a major role in the current massive decline amphibians are facing. Ecotoxicology aims at understanding the impact of toxic substances from their binding to a cellular molecule to their effect on higher levels such as populations, communities and finally ecosystems. On this purpose, several tools were developed during the last decades including molecular biomarkers. Molecular biomarkers are sub-lethal biochemical changes resulting from individual exposure to toxicants. These measurable parameters are used to highlight the exposition to and the effects of pollutants both in the laboratory and in-situ. Within the biomarkers of effect, different types of toxicity can be measured such as the neurotoxicity, the immunotoxicity and the reprotoxicity. Unfortunately, the measurement of these biomarkers implies either tissue collection by invasive method or individuals' euthanasia. These approaches are not desirable when we study endangered groups such as amphibians.

Objectives and Methods

In this master project, we aim at developing non-invasive methods for measuring molecular biomarkers in amphibians' saliva and/or epidermal mucus. Developing such methods would be of greatest importance for environmental biomonitoring and is highly consistent with the "Refinement" part of the principles of the 3R's (Russel et al., 1959)

Literature



WEBSITES

<http://wp.unil.ch/ecotox>