

Thyroid gland development in the larval Northwestern salamander (*Ambystoma gracile*)

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Presentation Description:

Amphibians are key indicator species of environmental pollution, but very few of the ~8000 possible species are well characterized. This research aims to describe normal thyroid gland development in the Northwestern salamander for use in future studies examining the impacts of pollution on development in a North American salamander.

Abstract:

Environmental toxicology investigates the adverse effects of contaminants on organisms and is important in understanding the risks chemicals pose to humans and wildlife. Amphibians are considered useful indicator species of environmental contamination because their permeable skin and semi- or fully aquatic life history make them particularly vulnerable to contaminants. In all amphibians the thyroid gland plays a key role in initiating metamorphosis from larval aquatic to adult life stages, thus it is a critical gland key to amphibian development and survival. Several studies in amphibians, mainly in frog species, have demonstrated that development can be affected by anthropogenic contaminants via direct impacts on thyroid gland development, differentiation, and growth.

Furthermore, many governments include frog growth, development, thyroid gland histopathology, and survival in toxicity testing regimes for contaminants, but currently no analogous salamander toxicity tests exist. Therefore, the sensitivity of salamanders to contaminants is largely unknown. This research focuses on a histological examination of the normal development of the thyroid gland to create a developmental atlas for the Northwestern salamander (*Ambystoma gracile*). This study will provide a qualitative and quantitative description of normal thyroid gland development from hatching through larval development (~ 4 months). Ultimately, this baseline thyroid gland development can be used as a measurable outcome to study the adverse effects of pollutants on the thyroid gland, a critical regulator of development in amphibians.

References/Acknowledgments:

I would like to thank my supervisor, Dr. Vicki Marlatt, and my lead author and co-researcher, Blake Danis, for their guidance and support throughout this incredible research opportunity.