# Review of: "Evolution of Venom Production in Marine Predatory Snails"

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Potential competing interests: No potential competing interests to declare.

The publication - Evolution of Venom Production in Marine Predatory Snails, is an intriguing analysis of the evolution of venom proteins across a set of predatory marine snails within the Neogastropoda. The manuscript is well-written, with suitable analytical comparisons between the species analyzed. The data is well presented and cross-referenced against a wide assortment of available datasets, from spiders to snakes, providing a good resource for other researchers working on venom proteins and evolution. The gene expression and protein analyses used appropriate software, with findings that are well presented in diagrams of anatomy and figures, with a significant amount of comparisons across other species. There is a considerable amount of data that will be of interest to researchers in the supplemental files. This includes the analyses that describe unique enrichments suggesting extracellular compartmentation rather than intracellular compartment terms, hinting at the role of diets in lineage-specific adaptations. This has further significance for many studies examining the role of microbiomes on evolution. The summarized comparisons across species and tissue types report a significant number of genes within the secretome, being specific to the salivary venom gland tissue. The functional differences reported suggest the three salivary gland types share common terms associated with vertebrate liver functions, like iron homeostasis, ion binding, and metabolism. The analyses also demonstrated terms related to hormone response across all three gland types, including ‘thyroid hormone generation’ in OEG- and LEG-specific gene sets, and ‘response to thyroglobulin triiodothyronine’ in VG-specific sets. This research will be of interest to those working on protein function and evolution, especially for early ancestral lines that diversified from aquatic to land environments, and the radiation and specialization of digestive enzymes, and defense protein specialization.