****SCHOOL OF NATURAL SCIENCES • DEPARTMENT OF ZOOLOGY**

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Dear Editor,

Please consider our manuscript entitled “Snake venom potency and volume are driven by metabolism, dimensionality and prey characteristics” for publication as a research articles in *Proceedings of the National Academy of Sciences of the United States of America.*

Snake venom is a topic which generates enormous interest for both researchers and the public. This interest stems from its general cultural significance; its importance as a source of biomedical compounds ([1](#_ENREF_1)); its importance as a public health concern ([2](#_ENREF_2)); and as a model of trait evolution ([3](#_ENREF_3), [4](#_ENREF_4)).

Despite such interest, many features of venom still remaining puzzling. One particularly perplexing puzzle is the enormous variation in the ability of venomous species to incapacitate prey. While some species, such as the Inland taipan, can kill 100,000’s of prey others species are effectively harmless. This has led to an ongoing debate on whether this variation is the result of evolutionary drift mechanisms or whether its driven by selection from sources such as the prey you eat, your body size or the habitat you live in ([1](#_ENREF_1), [5-8](#_ENREF_5)).

Our manuscript presents a series of comparative analysis across almost 100 venomous species that both resolves this debate and also presents novel findings on the evolution of snake venom. We show that snake venom is more potent when measured using species more closely resulted to its natural diet, hence showing that it is generally prey-specific, and that the amount of venom available to a species is dependent on its size and the dimensionality of the habitat it inhabits.

These findings are both highly significant and novel with implications for our understanding of not only venom evolution but also for predator trait evolution in general. We not only resolve a long standing debate within the field of venom evolution but also provide novel findings that venom yield increases according to metabolic scaling and not predator-prey scaling as expected and also provide, to our knowledge, the first test of habitat dimensionality on the evolution of a predatory trait.

We feel our manuscript is well suited for this journal as it not only follows previous research published here on related topics ([4](#_ENREF_4), [9](#_ENREF_9)), but also as these results have broad implications to the fields of ecology and evolution and is a subject will appeal to the journals wide readership.

The manuscript contains xxx words in the main text, and we estimate the paper will require 6 pages. None of the material has been published or is under consideration elsewhere.

We look forward to hearing from you in due course

Kevin Healy, on behalf of my co-authors

**Suggested Referees**

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We could go for the metabolic people such as Jim Brown?

**References**.

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