Dear Editor,

We are pleased to submit our manuscript **“Integrating macroecology and quantitative genetics: evolution of body size and brain size under island rule”** for consideration for publication as a review in the special issue **“Macroecology and Geographical Ecology”** of *Oecologia australis*. We confirm that this is an original manuscript and it has not been submitted to any other journal. All people entitled to authorship are named as co-authors and have agreed to the submission of this manuscript, and there is no conflict of interest regarding this manuscript. We also ensure that all acknowledgements have been made and the manuscript conforms to all legal requirements.

Our manuscript presents a research approach to test mechanistic process on macroecological patterns by using quantitative genetic tools. We describe quantitative genetic models and apply them to study *Hippopotamus* body size and brain size evolution in island, a pedagogical example of an intriguing macroecological pattern, called island rule. Specifically, we test if *Hippopotamus* island body size could be expected by neutral evolution and we reject this hypothesis. Thus, we measure how strong a direction selection should be to decrease mainland body size to those observed in islands and found that a weak selective strength would be sufficient to decrease body size. Next, we show that *Hippopotamus* brain size evolution does not only covariates with body size, an additional selective strength is required to explain it. Therefore, we show that body size and brain size dwarfism in island are consequences of directional selection and trait covariance and demonstrate how population level analyses could be used to explain macroecological patterns.

We hope that our manuscript proves valuable for publication in **“Macroecology and Geographical Ecology”** special issue. Please, do not hesitate to contact us should you have any queries regarding the manuscript. Finally, we suggest the following referees:

Joaquin Hortal (Departamento de Biogeografía y Cambio Global, [Museo Nacional de Ciencias Naturales](http://www.mncn.csic.es/), Madrid, Spain, [jqhortal@gmail.com](mailto:jqhortal@gmail.com))

Carlos Grelle (Instituto de Biologia, Departamento de Ecologia, UFRJ, RJ, Brasil, [grellece@biologia.ufrj.br](mailto:grellece@biologia.ufrj.br))

Rui Cerqueira (Centro de Ciências da Saúde, Instituto de Biologia, UFRJ, RJ, Brazil, [labvert@biologia.ufrj.br](mailto:labvert@biologia.ufrj.br))

Fernando Fernandez (Instituto de Biologia, Departamento de Ecologia, UFRJ, RJ, Brazil, [rodentia@biologia.ufrj.br](mailto:rodentia@biologia.ufrj.br))

Thales Renato Ochotorena de Freitas (Instituto de Biociências, UFRGS, RS, Brazil, [thales.freitas@ufrgs.br](mailto:thales.freitas@ufrgs.br)).

Sincerely,



José Alexandre Felizola Diniz-Filho

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Wanderson Junior Araújo dos Santos

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Lucas Lacerda Caldas Zanini Jardim