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Dear Editors,

We are submitting our manuscript titled “No general relationship between mass and temperature in endotherm species” to be considered for publication as a Research Article in eLife.

Bergmann's rule is a negative relationship between environmental temperature and body size within a species. It is one of the few patterns in ecology and biogeography believed to apply so generally that it deserves to be considered a rule. This rule has important implications for the response of natural systems to climate change, as it has recently been hypothesized that increasing global temperatures could result in decreasing body sizes for many species. This has been proposed as a “third universal response to warming”1,2. These hypothesized shifts in body size would have serious cascading impacts on ecological systems, as body size affects nearly every aspect of these systems.

Our work shows that this “rule” is neither general nor strong. We determined this by conducting the largest evaluation of this relationship ever carried out, by simultaneously assessing ten times more species than have previously been. To do so we used a quarter of a million individual size measurements from museums, which have only recently become available in a usefully aggregated form. Our work refutes a major textbook-level pattern in ecology and biogeography, calls into question a recent hypothesis about how natural systems will respond to climate change, and demonstrates the general utility of such data-intensive approaches (as opposed to reviews and meta-analyses) for determining the generality of scientific results.

Thank you for your consideration of our submission.

Sincerely,

Kristina Riemer, Robert Guralnick, and Ethan White

1. Gardner, J. L., Peters, A., Kearney, M. R., Joseph, L. & Heinsohn, R. Declining body size: a third universal response to warming? Trends Ecol. Evol. 26, 285–91 (2011).

2. Sheridan, J. A. & Bickford, D. Shrinking body size as an ecological response to climate change. Nat. Clim. Change 1, 401–406 (2011).