

# Modelling Thermal Responses of Metabolic Traits

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## Abstract

*Hello this is the Abstract*

## I. INTRODUCTION

TEMPERATURE is a fundamental parameter in the realm of metabolic biology. Metabolic processes are catalysed by enzymes which depend on kinetic, and ultimately heat, energy to function. As temperature decreases, atoms and molecules move progressively slower and thus metabolic rates decrease accordingly whereas when temperature increases, metabolic rates increase until the thermal optimum is reached. That is, the temperature at which optimal metabolic rate occurs ( $T_{pk}$  or  $T_{opt}$ ). Beyond this, increasing temperature will start to hinder the metabolic rate as the proteins that enzymes are made of will start to denature until the process stops entirely. These metabolic responses to temperature exhibit a remarkably similar pattern, often referred to as Thermal Performance Curves (TPCs), across an array of metabolic processes and taxa. This makes the study of TPCs a useful tool of comparison for all life on Earth as all species depend on metabolism for their energy. Furthermore, an increased understanding of how species respond to temperature is imperative in a rapidly warming world. If we can find some plasticity in a species' temperature tolerance then perhaps it will have a better chance of avoiding the mass extinction that is sweeping our planet. Of course, there are other ways a species may adapt through latitudinal range shifting or evolution, but the latter seems

unlikely in the time-frame available and the former is only possible for mobile species with suitable habitats to move to.

## II. METHODS

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**Table 1:** *Example table*

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First name	Last Name	Grade
John	Doe	7.5
Richard	Miles	2

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### III. RESULTS

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<sup>1</sup>Example footnote

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## IV. DISCUSSION

### i. Subsection One

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### ii. Subsection Two

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#### REFERENCES

- [Figueredo and Wolf, 2009] Figueredo, A. J. and Wolf, P. S. A. (2009). Assortative pairing and life history strategy - a cross-cultural study. *Human Nature*, 20:317–330.