

The Andes are a driver of physiological diversity in *Anolis* lizards

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1 Background

We investigated how thermal variation across elevation predicts the evolution of key physiological traits in tropical ectotherms and explored thermal physiology evolution in Andean anole lizards.

2 Importance

We know significantly less about the role of ecophysiological specialization in adaptive radiation compared to morphology, and even less about its influence on diversification in the Andes.

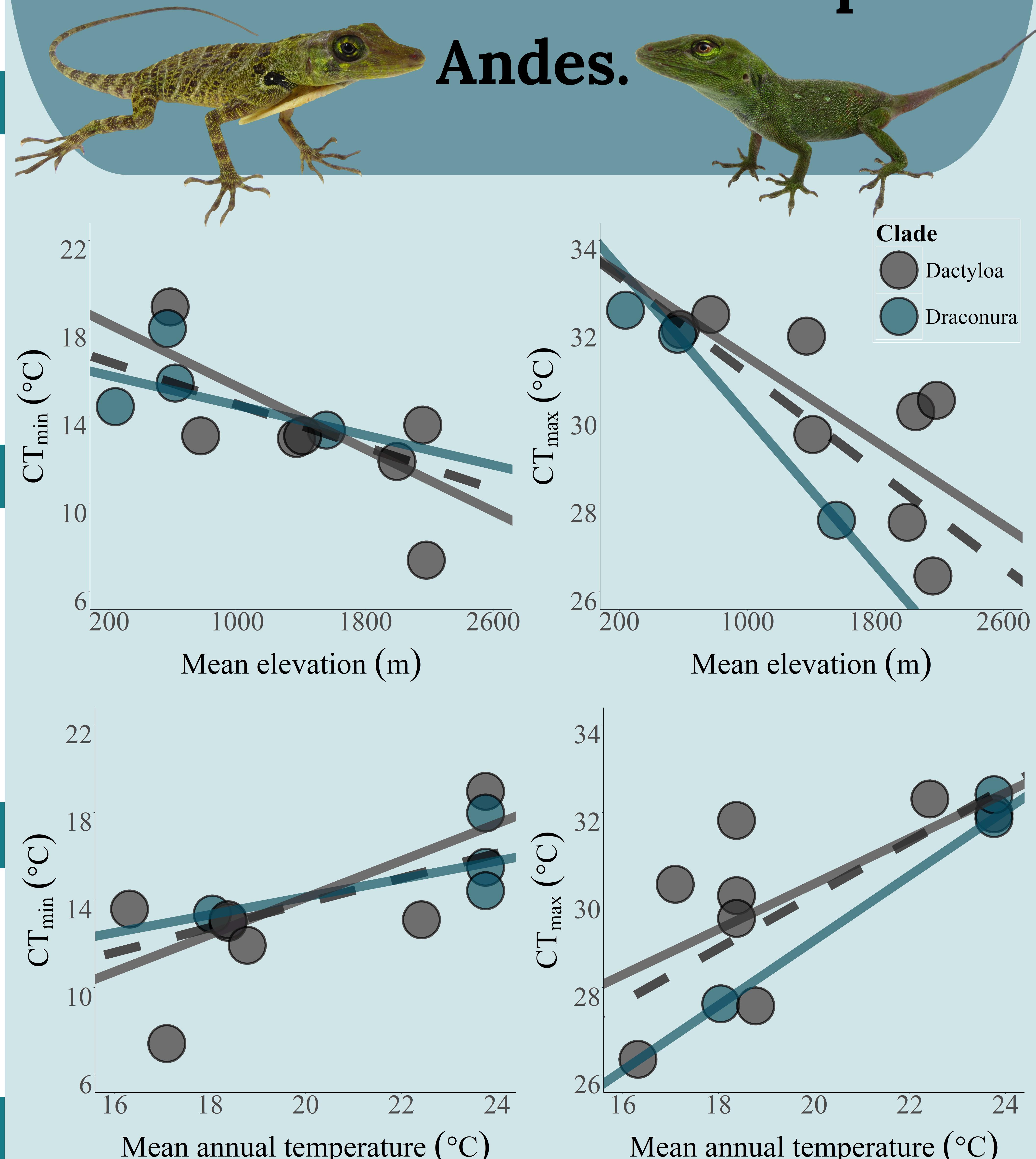
3 Methods

We measured CT_{min} and CT_{max} in 350 individuals representing 14 species along an elevation gradient (200–3000 m) in the Colombian Andes.

4 Results

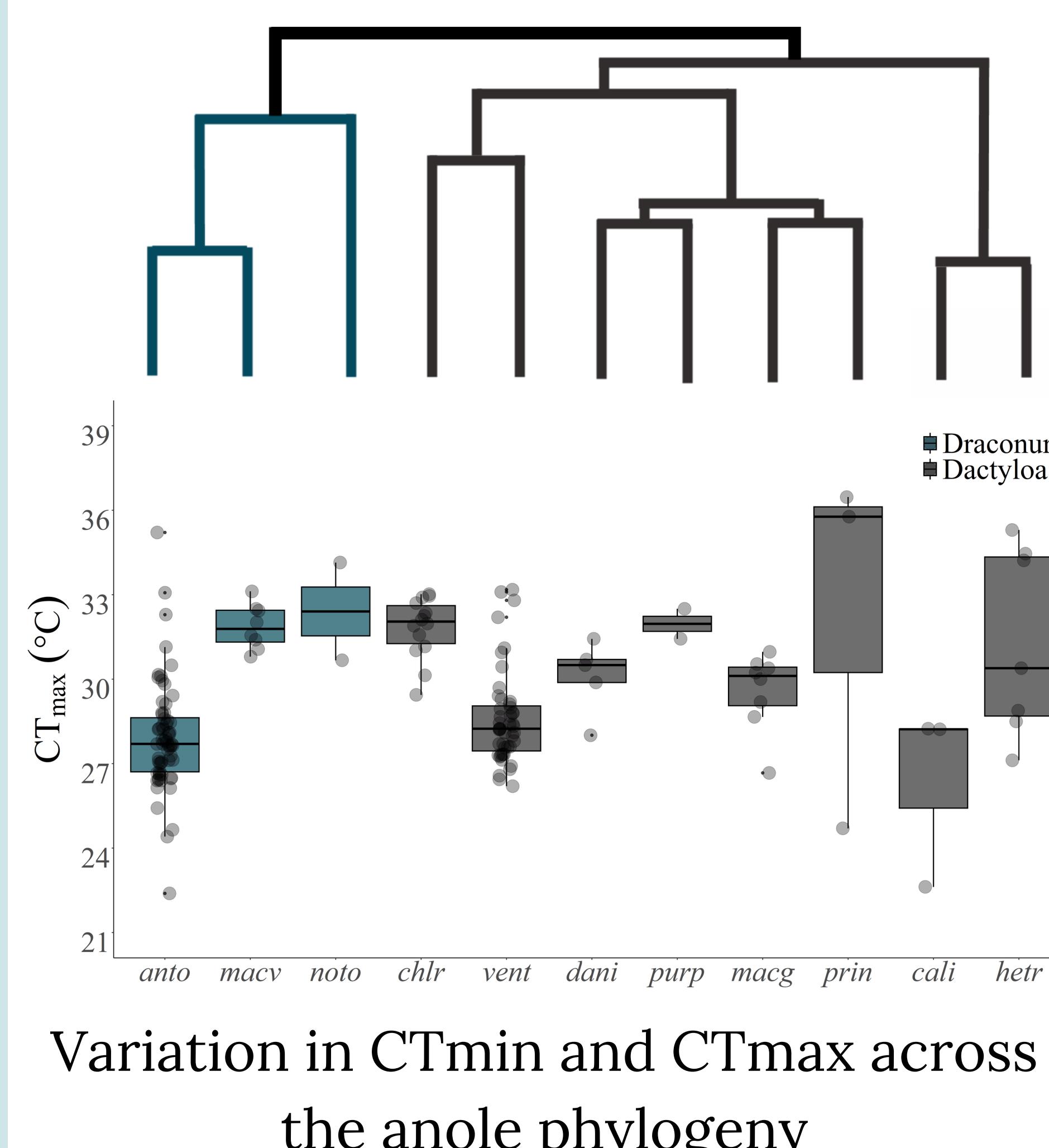
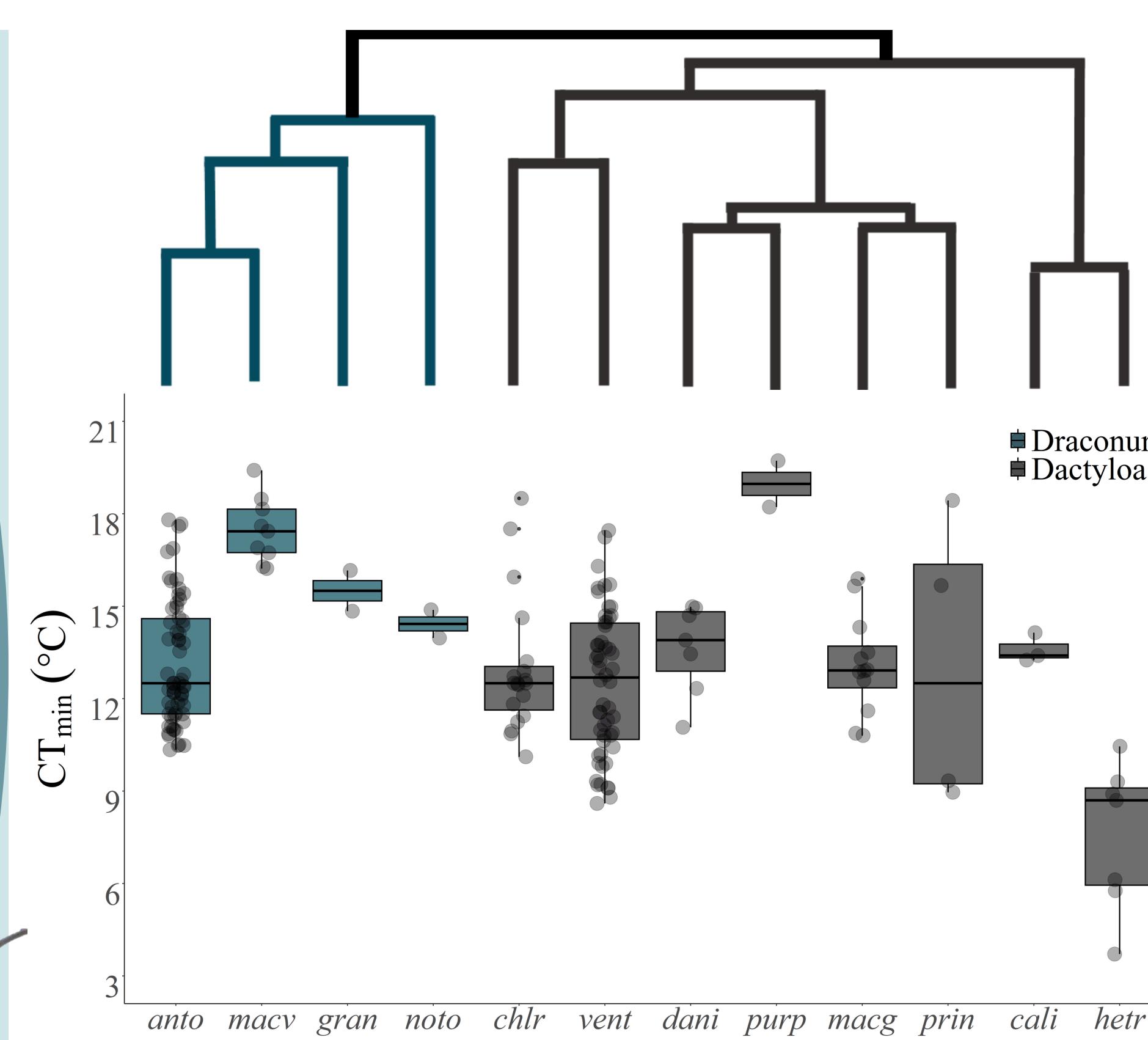
We found that CT_{min} and CT_{max} increase with environmental and operative temperature but decrease with elevation. Additionally, both thermal traits evolved independently of phylogeny and exhibited variation at both interspecific and intraspecific levels.

Physiological specialization across elevations likely drove the adaptive radiation and endemism of anole lizards in the tropical Andes.



Colored lines indicate the phylogenetic regression for Draconura species in green and Dactyloa species in black, and the dotted line represent the general regression. Each point corresponds to a different species of *Anolis* lizard.

Evolutionary rates of physiological traits were similar between clades, reflecting parallel specialization in heat and cold tolerance across elevation.



5 Conclusions

Our study shows that thermal limits vary among closely related species, highlighting adaptive radiation in response to the Andean environmental complexity. Anole species from Dactyloa and Draconura have independently evolved local specializations to Andean climatic regimes.

6 Acknowledgements

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