Review #1

Proposal Number:	1601083
NSF Program:	EVOLUTIONARY GENETICS
Principal Investigator:	Cahan, Sara I
Proposal Title:	DISSERTATION RESEARCH: Is proteome stability important in shaping thermal limits? A test in the North American forest ant genus Aphaenogaster.
Rating:	Multiple Rating: (Fair/Poor)

REVIEW:

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

This proposal aims to test if proteins are generally more stable in ant species that live in warmer regions than those that live in colder regions, by using experimental proteomics. I am not convinced that the relatively small difference in temperature (from north to south along the US east coast) will require a protein stability change. Is there any theory that makes this prediction? Even if this is the case, I am not sure that the experimental proteomics is sensitive enough to detect it.

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

The broad impact is standard.

Please evaluate the strengths and
weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if
applicable

The proposed work is very different from the advisor's typically work.

Summary Statement

The study is quite novel in that it will test by experimental proteomics whether protein stability for a species is correlated with the environmental temperature for the species. But whether this experiment has sufficient power is unknown. It is also unknown whether theory predicts sufficiently large differences in protein stability.

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