



## Review #3

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<b>Proposal Number:</b>	1601083
<b>NSF Program:</b>	EVOLUTIONARY GENETICS
<b>Principal Investigator:</b>	Cahan, Sara I
<b>Proposal Title:</b>	DISSERTATION RESEARCH: Is proteome stability important in shaping thermal limits? A test in the North American forest ant genus <i>Aphaenogaster</i> .
<b>Rating:</b>	Very Good

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## 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 investigate the role of whole proteome stability as a possible mechanism for thermal adaptation in ants along a latitudinal cline.

The rationale of the project, although not a new concept, is sound. Adaptations with thermal tolerance does not involve only Hsps but other mechanisms (outlined in the proposal e.g.) are also in play (as is often the case in nature). The PIs are also trying to use a relatively new technological tool in this study system.

There is no clear mention of the work pipeline the authors plan to use from MS m/z profile scans to characterization of the proteins from published ant genomes (a flow diagram extending on the figure 6 would be helpful including the soft wares they are planning to use.)

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

The proposal will help in training the graduate student with a new skill set involving collaborations with other labs in an interdisciplinary fashion. This could open future collaborative projects between the lab PIs. The mentoring and training of undergraduate students is also included in the plan, besides presentation of findings through conferences and publications

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

### Summary Statement

The proposal aims to identify more universal thermal adaptations in protein stability in an evolutionary context. I would rate it overall 'very good'. It would be a step further in the mechanistic understanding of the research question using a relatively new modified technique.

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