Exhibit thermal limits in the face of infectious disease: how important are pathogens?

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Global change is predicted to increase the frequency and severity of both extreme thermal events and disease outbreaks. Consequently, disease outcomes for a host may be increasingly dependent on the interaction between thermal stress and pathogen exposure. Missing from the intersection between studies of infectious disease and thermal ecology, however, is the capacity for pathogen exposure to directly disrupt a host’s ability to cope with thermal stress. Here, we present results exploring the impact of infection on host performance under thermal stress in several host-bacterial pathogen systems. We show that infection is an important determinant of host thermal performance. Indeed, infection can reduce host thermal limits to a degree that equals the variation in thermal limits we see within widely distributed species, and equals the effects of other ecologically relevant stressors. We then show how alteration of host thermal limits can vary across host and pathogen genotypes, host-pathogen systems, previous thermal experience, and locally adapted populations. We finally pose remaining questions and future directions key in further understanding the consequences of pathogen-mediated changes in host thermal performance.

1. What is your pathogen? Multiple options possible (e.g. if working on coinfections)
   - Bacteria: Pasteuria ramosa
   - Other: Others

2. On a scale of 1-5 is your work mostly eco/epidemiological or evolutionary? 3

3. On a scale of 1-5 is your work mostly theoretical or experimental/empirical? 4