Making a great poster presentation

Design and content

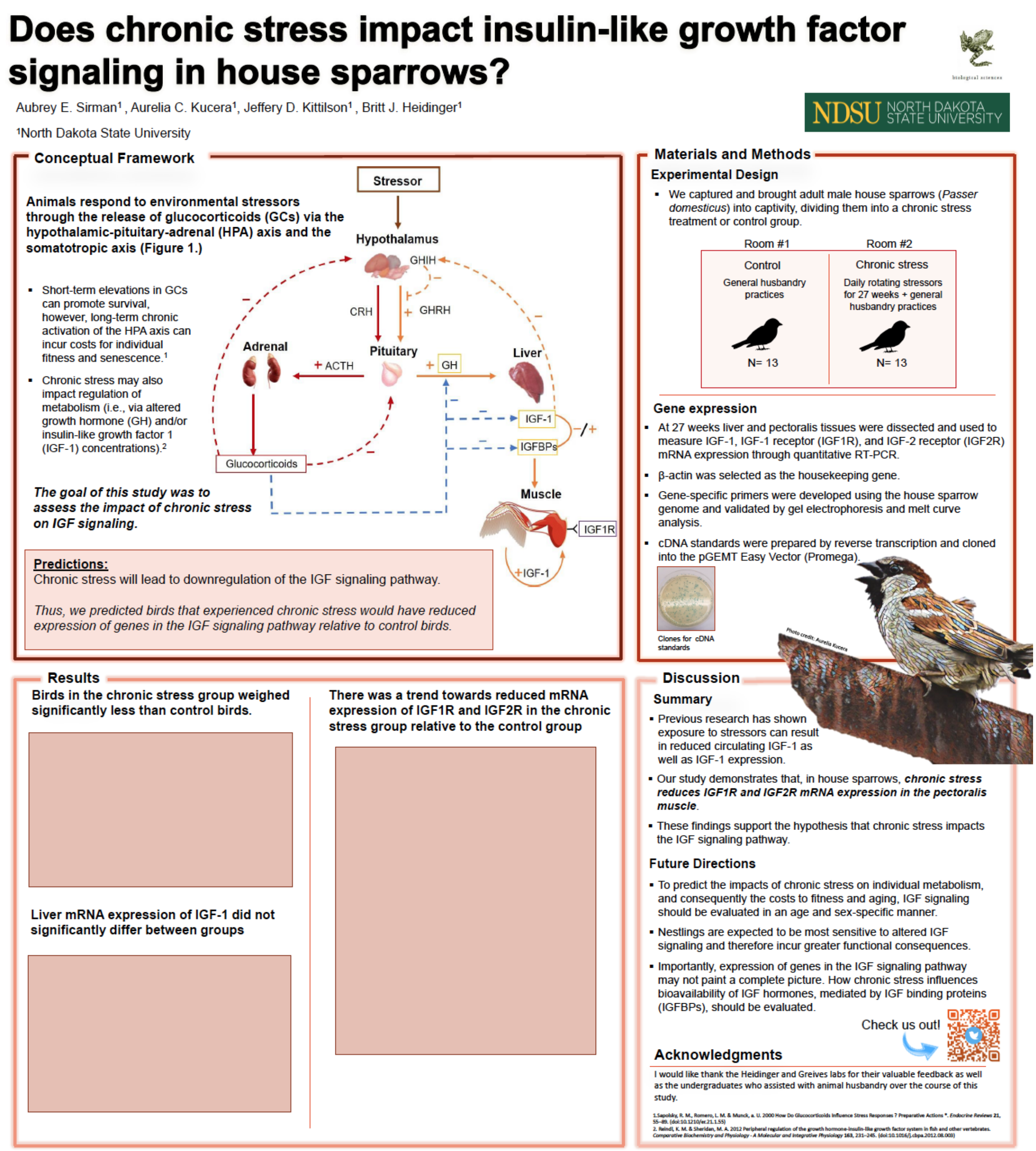
- **Tell a story.** Establish a narrative and build your poster around that. Posters are like visual abstracts, so…
- **Focus on your figures!** Take advantage of the opportunity to visually convey information and avoid big blocks of text.
- **Create visual flow.** Your poster should lead your audience through your story.
- **Write and design for your audience.** Your audience likely doesn't know your work and has never seen your poster before.
    - What are the key points and conclusions?
    - What do you want someone to take away after 30 seconds of viewing? 5 minutes?
    - What are good conversation starters?
- Check out online resources:
    - The Better Posters blog has an extensive archive of great info on making posters and poster critiques! http://betterposters.blogspot.com
        - Especially this post on entry points.
    - Also see this video from BioRender.

Nuts and bolts – making a poster

- PowerPoint and Adobe products (Illustrator, Photoshop, InDesign) are popular options.
- BioRender is free and online, may be helpful for making figures, templates (https://biorender.com)
- Make sure text is big enough – go bigger than you think you need!
    - Font size should be absolutely no smaller than 28-point but should be 40- to 70-point
- Use an easy-to-read font and be consistent with it across the poster.
- Use a colorblind palette to make figures accessible to colorblind viewers (e.g., https://davidmathlogic.com/colorblind/)

If you can make an audio/video file to go with your poster, make it short, simple, and fun—don't just read the poster. Boil the poster down to what an average reader wants to know, or add interesting anecdotes.

Example posters and layouts below!



Does chronic stress impact insulin-like growth factor signaling in house sparrows?

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Conceptual Framework

Animals respond to environmental stressors through the release of glucocorticoids (GCs) via the hypothalamic-pituitary-adrenal (HPA) axis and the somatotropic axis (Figure 1.)

- Short-term elevations in GCs can promote survival, however, long-term chronic activation of the HPA axis can incur costs for individual fitness and senescence.[1]
- Chronic stress may also impact regulation of metabolism (i.e., via altered growth hormone (GH) and/or insulin-like growth factor 1 (IGF-1) concentrations).[2]

The goal of this study was to assess the impact of chronic stress on IGF signaling.

Predictions:
Chronic stress will lead to downregulation of the IGF signaling pathway.

Thus, we predicted birds that experienced chronic stress would have reduced expression of genes in the IGF signaling pathway relative to control birds.

Materials and Methods

Experimental Design

- We captured and brought adult male house sparrows (*Passer domesticus*) into captivity, dividing them into a chronic stress treatment or control group.

Room #1	Room #2
Control	Chronic stress
General husbandry practices	Daily rotating stressors for 27 weeks + general husbandry practices
N= 13	N= 13

Gene expression

- At 27 weeks liver and pectoralis tissues were dissected and used to measure IGF-1, IGF-1 receptor (IGF1R), and IGF-2 receptor (IGF2R) mRNA expression through quantitative RT-PCR.
- β-actin was selected as the housekeeping gene.
- Gene-specific primers were developed using the house sparrow genome and validated by gel electrophoresis and melt curve analysis.
- cDNA standards were prepared by reverse transcription and cloned into the pGEMT Easy Vector (Promega).

Clones for cDNA standards

Photo credit: Aurelia Kucera

Results

Birds in the chronic stress group weighed significantly less than control birds.

Liver mRNA expression of IGF-1 did not significantly differ between groups

There was a trend towards reduced mRNA expression of IGF1R and IGF2R in the chronic stress group relative to the control group

Discussion

Summary

- Previous research has shown exposure to stressors can result in reduced circulating IGF-1 as well as IGF-1 expression.
- Our study demonstrates that, in house sparrows, ***chronic stress reduces IGF1R and IGF2R mRNA expression in the pectoralis muscle***.
- These findings support the hypothesis that chronic stress impacts the IGF signaling pathway.

Future Directions

- To predict the impacts of chronic stress on individual metabolism, and consequently the costs to fitness and aging, IGF signaling should be evaluated in an age and sex-specific manner.
- Nestlings are expected to be most sensitive to altered IGF signaling and therefore incur greater functional consequences.
- Importantly, expression of genes in the IGF signaling pathway may not paint a complete picture. How chronic stress influences bioavailability of IGF hormones, mediated by IGF binding proteins (IGFBPs), should be evaluated.

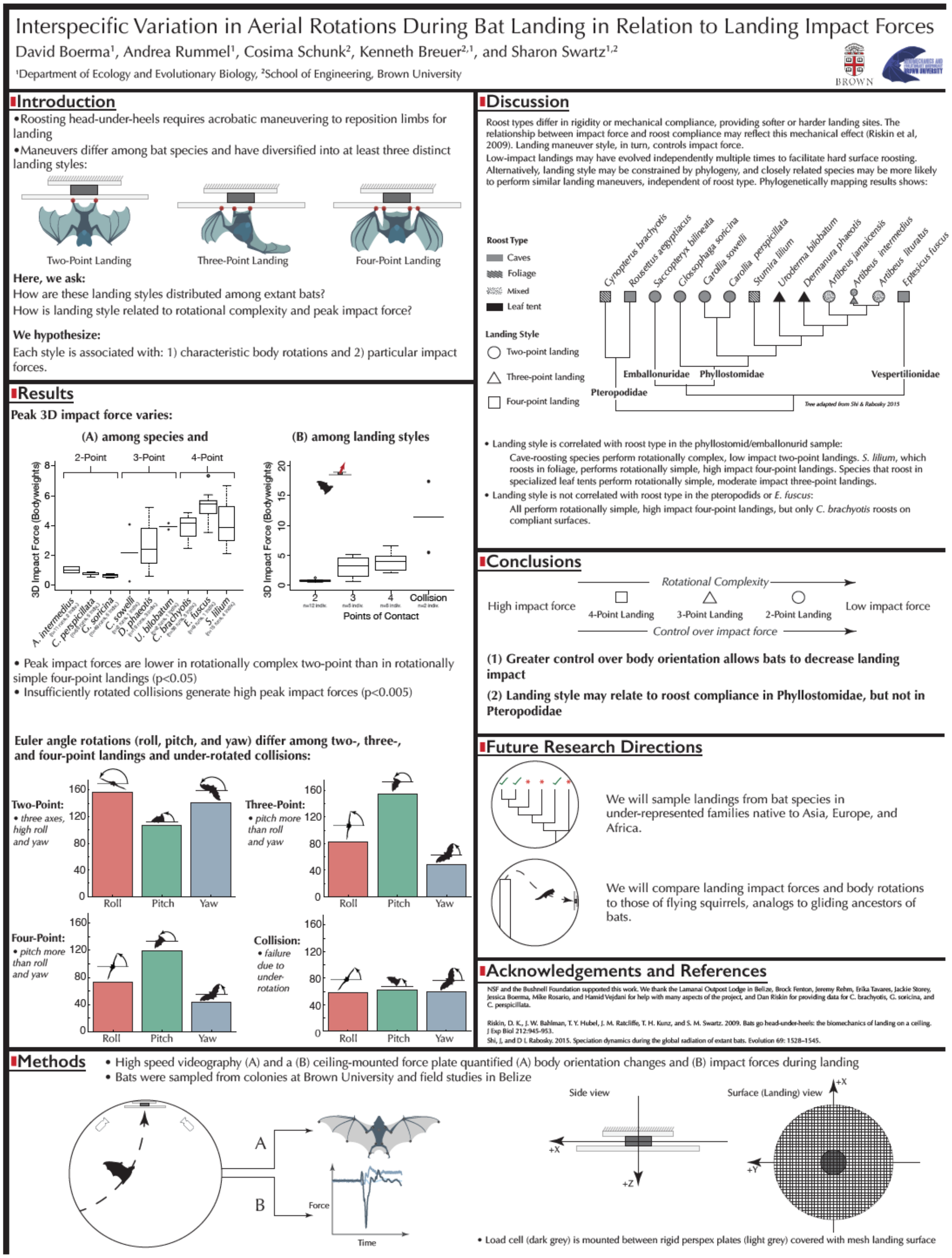
Check us out!

Acknowledgments

I would like thank the Heidinger and Greives labs for their valuable feedback as well as the undergraduates who assisted with animal husbandry over the course of this study.

1.Sapolsky, R. M., Romero, L. M. & Munck, a. U. 2000 How Do Glucocorticoids Influence Stress Responses ? Preparative Actions *. *Endocrine Reviews* 21, 55–89. (doi:10.1210/er.21.1.55)
2. Reindl, K. M. & Sheridan, M. A. 2012 Peripheral regulation of the growth hormone-insulin-like growth factor system in fish and other vertebrates. *Comparative Biochemistry and Physiology - A Molecular and Integrative Physiology* 163, 231–245. (doi:10.1016/j.cbpa.2012.08.003)

Easy-to-read layout – each section is in a box, and the boxes read left to right and top to bottom. Very intuitive. Also a nice use of space – no big blocks of text, nice figures (results figures not displayed).



Reads top to bottom, left to right. A little busy, but with a cohesive style throughout. Each section is separated by heavy lines. The focus is on the figures, with some white space to keep the poster from feeling too crowded.

Examining how recovery periods during chronic stress impact physiology and behavior in *Passer domesticus*

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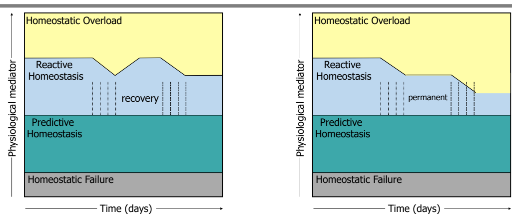
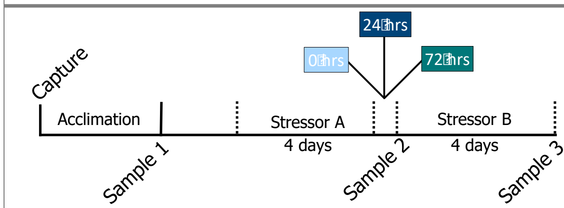
Reactive Scope & Recovery Periods



- Reactive scope[1] is a model that aims to help us better understand **when**, **why**, and **how** pathological symptoms of chronic stress develop
- Predicts pathology (symptoms of chronic stress) develops as a result of wear and tear during repetitive, acute stressors
- Prior study[2] reported exposure to 8 days of noxious stimuli elicit significant physiological and behavioral changes
- Recovery periods could provide relief of this wear and tear

Research Question: Do brief recovery periods change the way house sparrows respond to lab-induced chronic stress?

Experimental Design



- 27 □ and □ house sparrows, randomly assigned to 3 groups
  - 0 hrs
  - 24 hrs
  - 72 hrs

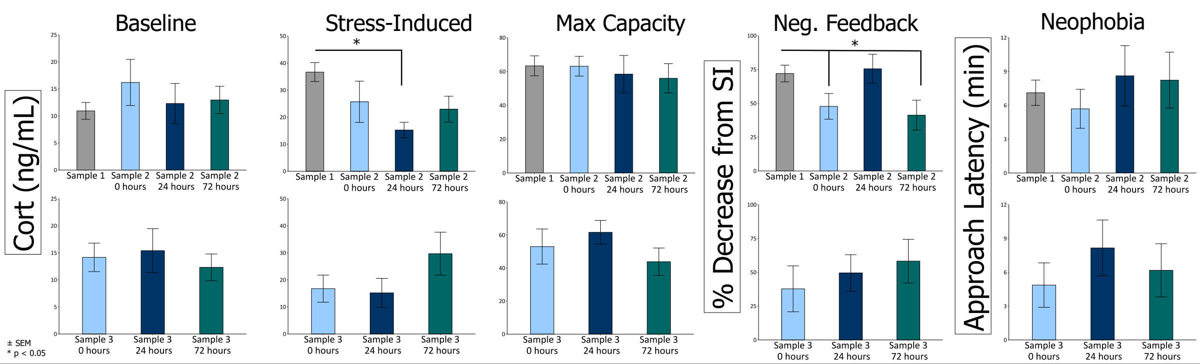
  Recovery periods between Stressor A and B

  cage rolling (30 min 2x/day)

  Intermittent cage tapping (30 min 2x/day)
- **Hypothesis:** Longer recovery periods lead to relief of wear and tear, enabling an animal to avoid homeostatic overload

Longer Recoveries → Relief of W-and-T → Recovered SI and feedback; Regained neophobia

Results



Conclusions

- Results suggest that short recovery periods *can* influence physiology
  - Longer periods may be necessary for full recovery
- 4 days may not have been quite long enough to produce significant responses in HPA axis regulation

Acknowledgements & References

We would like to thank the Tufts Animal Care staff. This study was conducted with support from NSF IOS1655269 to L.M.R. and NSF DBI 1560380 to P.S.

1. Romero et al., 2009. *Hormones and Behavior*, *55*(3), 375-389.
2. Gormally et al., 2017. In submission.

Simple and very clear! The figures are the focus, the flow is intuitive, and the text is informative and easy to read.