

**ANDREA D. RUMMEL**  
Princeton University

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## EDUCATION

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- 2021      **Ph.D.** Ecology and Evolutionary Biology, Brown University  
            “Thermal Sensitivity of Bat Wing Muscles”  
2014      **A.B.** Biological Sciences, University of Chicago  
2014      **S.B.** Geophysical Sciences, University of Chicago

## APPOINTMENTS

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- 2022 –      NSF Postdoctoral Fellow in Biology, Department of Ecology and Evolutionary  
                 Biology, Princeton University  
  
2021 – 2022    Postdoctoral Associate, Department of Ecology, Evolution, and Organismal  
                 Biology and Alpert Medical School, Brown University

## PUBLICATIONS

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- 2023    **Rummel, A.D.,** Sierra, M.M.<sup>†</sup>, Quinn B.L, Swartz, S.M. Hair, there and everywhere: a comparison of bat wing sensory hair distribution. The Anatomical Record. <https://doi.org/10.1002/ar.25176>
- 2023    **Rummel, A.D.,** Swartz, S.M., Marsh, R.L. Thermal stability of contractile proteins in bat wing muscles explains differences in temperature dependence of whole muscle shortening velocity. Physiological and Biochemical Zoology. 722449. <https://doi.org/10.1086/722449>
- 2022    Grider-Potter, N., **Rummel, A.D.,** 2022. Dietary influences on head and neck ranges of motion in neotropical bats. Journal of Zoology jzo.13011. <https://doi.org/10.1111/jzo.13011>
- 2022    **Rummel, A.D.,** Swartz, S.M., Marsh, R.L., Faure, P.A., 2022. A comparison of thermal sensitivities of wing muscle contractile properties from a temperate and tropical bat species. Journal of Experimental Biology jeb.243987. <https://doi.org/10.1242/jeb.243987>
- 2021    **Rummel, A.D.,** Swartz, S.M., Marsh, R.L., 2021. A proximal-distal difference in bat wing muscle thermal sensitivity parallels a difference in operating temperatures along the wing. Proceedings of the Royal Society B. <https://doi.org/10.1098/rspb.2021.0009>
- 2019    **Rummel, A.D.,** Swartz, S.M., Marsh, R.L., 2019. Warm bodies, cool wings: regional heterothermy in flying bats. Biology Letters. <https://doi.org/10.1098/rsbl.2019.0530>

- 2018 **Rummel, A.D.**, Swartz, S.M., Marsh, R.L., 2018. Low thermal dependence of the contractile properties of a wing muscle in the bat *Carollia perspicillata*. The Journal of Experimental Biology jeb.180166. <https://doi.org/10.1242/jeb.180166>

*In review:*

**Rummel, A.D.**, Sheehy, E.T.<sup>†</sup>, Schachner, E.R., Hedrick, B.P. In review. Assessing morphological variation and two-dimensional geometric morphometric methods in three species of Louisiana bat. Royal Society Open Science.

<sup>†</sup>undergraduate coauthor.

## AWARDS

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|-------------|---|
| 2022 – 2024 | National Science Foundation Postdoctoral Research Fellowship in Biology, \$138,000  |
| 2017 – 2021 | National Defense Science and Engineering Graduate Fellowship, Air Force Research Laboratory, Department of Defense, \$386,500 |
| 2019        | Ecology and Evolutionary Biology Doctoral Dissertation Enhancement Grant, \$9,550, Brown University                           |
| 2015 – 2018 | Presidential Fellowship, \$30,900 in stipend support each year, Brown University  |
| 2015        | Special Dean's Award, \$5,000, Brown University   |
| 2010 – 2014 | University Scholarship, University of Chicago   |
| 2014        | Metcalf Fellowship, \$6000. University of Chicago, Marine Biological Laboratory   |
| 2013        | Dean's Fund for Student Life, \$1,200. University of Chicago  |

## TEACHING EXPERIENCE

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| 2021 – 2022 | <b>Gross Human Anatomy</b> , Alpert Medical School, Brown University<br><i>Postdoctoral Teaching Associate</i><br>Supervised other TAs, lectured on functional anatomy, prepared prosections, Guided students through lab dissections, graded lab practicals; ~150 students/year |
| 2019 – 2020 | <b>Gross Human Anatomy</b> , Alpert Medical School, Brown University<br><i>Graduate Teaching Assistant</i><br>Guided students through lab dissections, prepared prosections, lectured on functional anatomy; ~150 students/year  |
| 2018        | <b>Biological Design</b> , Brown University<br><i>Teaching Assistant</i><br>Coordinated undergraduate TAs, graded assignments, held office hours; 20 students  |
| 2018        | <b>Sheridan Center for Teaching and Learning</b> , Brown University<br><i>Graduate Teaching Consultant</i><br>Led small-group discussions on pedagogy as part of Reflective Teaching Seminar, graded assignments; 5 students   |
| 2016 – 2018 | <b>Gross Human Anatomy</b> , Alpert Medical School, Brown University<br><i>Graduate Teaching Assistant</i>   |

- Guided students through lab dissections, prepared prosections, lectured on functional anatomy; ~150 students/year
- 2017 **Sheridan Center for Teaching and Learning**, Teaching seminar: Reflective Teaching, Brown University
- 2014 – 2015 **Biodiversity**, University of Chicago  
*Teaching Assistant*  
Led laboratory section, graded lab assignments; ~20 students/semester

## MENTORSHIP

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- 2022 – Princeton Vaughn, graduate student, Princeton University
- 2020 – 2022 Rea Yoh, undergraduate honors thesis, Brown University
- 2020 – 2021 Takuma Kobayashi, supervised independent study for credit and undergraduate honors thesis, Brown University
- 2019 – 2020 Melissa Sierra, undergraduate honors thesis, Brown University
- 2019 – 2020 Taylor Walker, supervised independent study for credit, Brown University

## INVITED TALKS

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- 2023 Tulane University, Department of Ecology and Evolutionary Biology. Invited seminar.
- 2023 Oklahoma State University, Department of Integrative Biology. Invited seminar.
- 2023 Johns Hopkins University School of Medicine, Center for Functional Anatomy and Evolution. Invited seminar.

## OUTREACH AND MEDIA

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- 2021 Bat Superpowers, NOVA, PBS. <https://www.pbs.org/wgbh/nova/video/bat-superpowers/>
- 2015 – 2019 National Center for Science Education, Scientist in the Classroom program. Visited middle school science classrooms and collaborated with a middle school science teacher to lead hands-on biology activities.
- 2019 BioScience Talks podcast, American Institute of Biological Science. [link](#)

## FIELD EXPERIENCE

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- 2022 Puerto Rico; crested anole thermal physiology
- 2022 Southwestern Research Station, Portal, AZ; bat thermal physiology
- 2016 – 2018 Lamanai, Belize; bat wing thermal physiology and landing dynamics
- 2016 Gamboa, Panama; bat landing dynamics
- 2015 Reno, NV; lizard and newt camouflage
- 2014 South Australia, Australia; fairy wren social behavior
- 2014 Friday Harbor Laboratories, Friday Harbor, WA; Marine Invertebrate Zoology course

## SERVICE AND MEMBERSHIPS

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2018 – 2021 Society for Integrative and Comparative Biology: Division of Comparative Physiology and Biochemistry representative for Student and Postdoctoral Affairs Committee  
2018 – present American Physiological Society  
2016 North American Society for Bat Research  
2015 – present Society for Integrative and Comparative Biology

**REVIEWS:** *Journal of Comparative Physiology: B*; *Canadian Journal of Zoology*; *PeerJ*; *Animal Biotelemetry*; *Journal of Mammalogy*; *Proceedings of the Royal Society: B*

## CONTRIBUTED PRESENTATIONS

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Rummel, A.D., Quinn, B.L., Corcoran, A.J., Swartz, S.M. Cold flights on cold nights: extreme regional heterothermy in desert bats. Society for Integrative and Comparative Biology 2023 Annual Meeting, Austin, TX. Oral presentation. January 6, 2023.

Rummel, A.D., Swartz, S.M., Marsh, R.L. Physiological adaptation to local temperature differences among bat wing muscles. Society for Integrative and Comparative Biology 2021 Virtual Annual Meeting. Oral presentation. January 2, 2021.

Rummel AD, Faure PA, Smotherman MS, Swartz SM, and Marsh RL. Is Reduced Thermal Sensitivity in Distal Wing Muscles a Functional Adaptation to Bats' Unique Wing Morphology? Society for Integrative and Comparative Biology 2020 Annual Meeting, Austin, TX. Oral presentation. January 7, 2020.

Rummel AD, Faure PA, Smotherman MS, Swartz SM, and Marsh RL. Is Reduced Thermal Sensitivity in Distal Wing Muscles a Functional Adaptation to Bats' Unique Wing Morphology? North American Symposium on Bat Research 49, Kalamazoo, MI. Oral presentation. October 24, 2019.

Rummel, A.D., Swartz, S.M., Marsh, R.L. Regional thermal specialization in bat wing muscles: a proximal–distal temperature and thermal sensitivity gradient. Society for Integrative and Comparative Biology 2019 Annual Meeting, Tampa, FL. Oral presentation. January 6, 2019.

Rummel, A.D., Swartz, S.M., Marsh, R.L. A distal bat wing muscle operates at low temperature *in vivo* and has low thermal sensitivity of contractile properties. American Physiological Society, Intersociety Meeting, Comparative Physiology: Complexity and Integration 2018, New Orleans, LA. Oral presentation. October 26, 2018.

Rummel, A.D., Swartz, S.M., Marsh, R.L. A Comparison of the Thermal Sensitivities of Limb Muscles in a Small Bat Species and the Laboratory Mouse. Society for Integrative and Comparative Biology 2018 Annual Meeting, San Francisco, CA. Poster presentation. January 4, 2018.

Rummel, A.D., Swartz, S.M., Marsh, R.L. Contractile properties of a carpal extensor in *Carollia*: are wing muscles adapted to operate below core body temperature? Society for Integrative and Comparative Biology 2017 Annual Meeting, New Orleans, LA. Oral presentation. January 5, 2017.

Boerma, D.B., Rummel, A.D., Breuer, K.B., Schunk, C., Swartz, S.M. Complex Aerial Rotations Decrease Landing Impact Force in Bats. Society for Integrative and Comparative Biology 2017 Annual Meeting, New Orleans, LA. Poster presentation. January 5, 2017.

Rummel, A.D., Swartz, S.M., Marsh, R.L. Contractile properties of a carpal extensor in *Carollia*: are wing muscles adapted to operate below core body temperature? North American Symposium on Bat Research 46, San Antonio, TX. Oral presentation. October 15, 2016.

### Contact Information for References

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