ANDREA D. RUMMEL
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EDUCATION

2021	**Ph.D.** Ecology and Evolutionary Biology, Brown University
2014	**A.B.** Biological Sciences, University of Chicago
2014	**S.B.** Geophysical Sciences, University of Chicago

APPOINTMENTS

2023 –	Assistant Professor, Department of BioSciences, Rice University
2022 – 2023	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

2024 **Rummel, A.D.**, Sheehy, E.T.†, Schachner, E.R., Hedrick, B.P., 2024. Sample size and geometric morphometrics methodology impact the evaluation of morphological variation. Integrative Organismal Biology. https://doi.org/10.1093/iob/obae002

2023 **Rummel, A.D.**, Sierra, M.M.†, Quinn B.L, Swartz, S.M., 2023 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., 2023. 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

[†]undergraduate coauthor.

AWARDS

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

PENDING FUNDING

Pending	NSF Organismal Response to Climate Change. Co-PI: "Collaborative Research: ORCC: Climate Change in the Leaf Litter: An interdisciplinary approach integrating physiology, biomechanics, ecology, and genomics in a model salamander." Submitted 12/13/23.

TEACHING EXPERIENCE

2021 – 2022	**Gross Human Anatomy**, Alpert Medical School, Brown University *Postdoctoral Teaching Associate*
2019 – 2020	**Gross Human Anatomy**, Alpert Medical School, Brown University *Graduate Teaching Assistant*
2018	**Biological Design**, Brown University *Teaching Assistant*
2018	**Sheridan Center for Teaching and Learning**, Brown University *Graduate Teaching Consultant*
2016 – 2018	**Gross Human Anatomy**, Alpert Medical School, Brown University *Graduate Teaching Assistant*

2017 **Sheridan Center for Teaching and Learning**, Teaching seminar: Reflective Teaching, Brown University

2014 – 2015 **Biodiversity**, University of Chicago
Teaching Assistant

MENTORSHIP

2022 – Princeton Vaughn, graduate student, Princeton University

2022 – 2023 Chloe Raichle, undergraduate thesis, 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

2023 University of Florida College of Veterinary Medicine, Department of Physiological Sciences. Linda Hayward Physiological Sciences Seminar.

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

2023 All Things Considered, NPR. https://www.npr.org/2023/06/28/1184894507/under-extreme-heat-squirrels-sploot

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

2022 – 2023 Southwestern Research Station, Portal, AZ; bat thermal physiology

2022 Puerto Rico; crested anole 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

2023 – present	Assistant Editor, Journal of Integrative and Comparative Biology
2024	NSF Reviewer
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; Royal Society Interface*

CONTRIBUTED PRESENTATIONS

Rummel, A.D., Li, O., Hedrick, B.P., Swartz, S.M., Marsh, R.L. Distal wing muscle activity in a small fruit bat**.** Society for Integrative and Comparative Biology 2024 Annual Meeting, Seattle, WA. Oral presentation. January 3, 2024.

Vaughn, P., Middleton, C., Heine, A., Sinha, I., Rummel, A.D., Campbell-Staton, S. Examining the basis of performance in high wind conditions in a lizard, *Anolis sagrei.* Society for Integrative and Comparative Biology 2024 Annual Meeting, Seattle, WA. Oral presentation. January 6, 2024.

Hedrick, B.P., Sheehy, E., Schachner, E.R., Rummel, A.D. Sample size and two-dimensional geometric morphometrics impact the evaluation of morphological variation in three species of Louisiana bat. International Congress of Vertebrate Morphology. Cairns, Australia. Oral presentation. July 31, 2023.

Quinn, B.L., Rummel, A.D., Sierra, M.M., Swartz, S.M. Hair, there and everywhere: a comparison of bat wing sensory hair distribution. International Congress of Vertebrate Morphology. Cairns, Australia. Oral presentation. July 31, 2023.

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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