

KAT SCHROEDER, PH.D.

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STATEMENT

I am a paleoecologist focused on growth rate and body size as it pertains to community dynamics, predatory behavior and physiological ecology of non-avian dinosaurs. Advancing our understanding of the natural world, protecting the planet's resources, learning new skills and educating the general public on the wonders of nature and history, and man's influence upon them, are my ideals. I strive to be open and welcoming with coworkers, collaborators and students, and focus on building dynamic teams, integrating a wide variety of experience and knowledge with which to solve problems. Independent research, field work and teaching are my ultimate goals, with an aim to secure a position at globally respected institution. With experience directing and publishing research, planning outreach events, presenting at academic conferences, teaching, writing grants and planning and implementing programmatic changes, I am ready to take on the next challenge.

EDUCATION

- 2022 **Doctor of Philosophy, Biology**
University of New Mexico
Ontogenetic Niche Shift as a Driver of Community Structure and Diversity in Non-Avian Dinosaurs
Awarded with Distinction
- 2017 **Master of Science, Biology**
University of New Mexico
Mind the Gap: a Macroecological Assessment of the Sub-Adult Theropod Morphospecies Hypothesis
- 2011 **Bachelor of Science, Biology**
University of New Mexico
Minor in Earth and Planetary Sciences

PEER REVIEWED PUBLICATIONS

- Schroeder, K.M., Mueller, E., and DeSantis, L.A., 2022. **Sinking teeth into Ontogeny: Dental Microwear Textural Analysis Quantifies Dietary Niche Partitioning Between and Within Tyrannosaurs.** *Frontiers in Ecology and Evolution Science*, in review
- Van Vranken, N.E.co, and Schroeder, K.M.co. **Making a Run for it: the Impact of Flight-Adaptive Traits on Niche Partitioning in Carnivorous Non-Avian Theropods.** *Fossil Imprint*, in review
- Schroeder, K., Lyons, S.K., and Smith, F.A., 2022. **Response to Comment on The Influence of Juvenile Dinosaurs on Community Structure and Diversity.** *Science*, 375 (6578)
- Hummel, G. E., Young, A. I., Schroeder, K. M., Ruyack A., Schiess, A. R. B., Finnegan, P. S., Adams, D. P., Nordquist, C. D., 2021. **Germanium Telluride Chalcogenide Switches for RF Applications.** *Sandia National Laboratories SAND Reports*, pp. 1-70
- Schroeder, K., Lyons, S.K., and Smith, F.A., 2021. **The Influence of Juvenile Dinosaurs on Community Structure and Diversity.** *Science*, 371(6532) pp. 941-944.
- McKeown, M., Brusatte, S.L., Williamson, T.E., Schwab, J.A., Carr, T.D., Butler, I.B., Muir, A., Schroeder, K., Espy, M.A., Hunter, J.F. and Losko, A.S., 2020. **Neurosensory and Sinus Evolution as Tyrannosauroid Dinosaurs Developed Giant Size: Insight from the Endocranial Anatomy of *Bistahieversor sealeyi*.** *The Anatomical Record*, 303(4) pp.1043-1059.

Nelson, R.O., Vogel, S.C., Hunter, J.F., Watkins, E.B., Losko, A.S., Tremsin, A.S., Borges, N.P., Cutler, T.E., Dickman, L.T., Espy, M.A., Gautier, D.C., Madden, A.C., Majewski, J., Malone, M.W., Mayo, D.R., McClellan, K.J., Montgomery, D.S., Mosby, S.M., Nelson, A.T., Ramos, K.J., Schirato, R.C., Schroeder, K., Sevanto, S.A., Swift, A.L., Vo, L.K., Williamson, T.E., Winch, N.M., 2018 **Neutron Imaging at LANSCE—From Cold to Ultrafast**. *Journal of Imaging*, 4(2) p. 45.

Lewis, R.M., Henry, M.D., and Schroeder, K., 2017 **Vacuum Gap Microstrip Microwave Resonators for 2.5-D Integration in Quantum Computing**. *IEEE Transactions on Applied Superconductivity* 27(4) pp. 1-4

Vogel, S., Nelson, R., Williamson, T., Espy, M., Schroeder, K. and Hunter, J., 2017. **Looking Inside a Tyrannosaur's Skull**. *Los Alamos National Lab*. (LANL), Los Alamos, NM (United States).

CONFERENCE PRESENTATIONS

Schroeder, K.M., Mueller, E., and DeSantis, L.A., 2022. **Sinking teeth into Ontogeny: Dental Microwear Textural Analysis Quantifies Dietary Niche Partitioning Between and Within Tyrannosaurs**. Romer Prize Session, 82nd Annual Meeting of the Society of Vertebrate Paleontology. Nov. 1-5. Toronto, Ontario, CA

Schroeder, K.M. ^{co}, and Van Vranken, N.E. ^{co}. **Making a Run for it: the Impact of Flight-Adaptive Traits on Niche Partitioning in Carnivorous Non-Avian Theropods**. 82nd Annual Meeting of the Society of Vertebrate Paleontology. Nov. 1-5. Toronto, Ontario, CA

Freymueller, N., DeMar, D., Dwyer, C., Farnsworth, I., Gaines, K., Hedberg, C., Keller, J., Moore, J., Myers, C., Perriguet, D., Rovelli, R., Schroeder, K., Silviria, J.S., Wilson, G. (2021) **The fate of the Hell Creek tetrapod biota: ecological niche modeling reveals geographic and environmental habitat changes for 106 genera across the End-Cretaceous mass extinction**. 81st Annual Meeting of the Society of Vertebrate Paleontology. Nov. 1-5. Virtual

Bykowski, R., Schroeder, K.M., Polly, P.D. (2021) **Non-avian theropod skull morphology tentatively supports ontogenetic niche shift among North American tyrannosaurids**: Geological Society of America Abstracts with Programs, v. 53, no. 6

Schroeder, K.M., Lyons, S.K., Smith, F.A. (2020) **Mind the gap: the impact of juvenile megatheropods on dinosaur body size distributions and global diversity**. Romer Prize Session, 80th Annual Meeting of the Society of Vertebrate Paleontology, Oct. 12-16, Virtual

Schroeder, K., Williamson, T. E., Brusatte, S., Espy, M., Gautier, C., Hunter, J., Losko, A., Nelson, R., Vogel, S. (2017) **Neutron computed tomography of cretaceous tyrannosauroid *Bistahieversor sealeyi* and paleocene phenacodontid *Tetraclaenodon puercensis* skulls shows detail not easily visible with x-ray CT**. 77th Annual Meeting of the Society of Vertebrate Paleontology. Aug. 23-26. Calgary, Alberta, CA.

Balk, M.A., Elliot-Smith, R., Smith, F.A., Grady, J.M., Harding, L., Lyons, S.K., Pardi, M.I., Pedersen, R., Schroeder, K., Tomé, C.P., Westover, M.L. 2017. **Here, there, and (almost) everywhere: identifying traits of wide-ranging species**. 8th Biennial Conference of the International Biogeography Society. Jan. 9-13. Tucson, Arizona, USA.

COURSES TAUGHT

University of New Mexico Department of Biology
Biology for Non-Majors Lab
Anatomy & Physiology I Lab

Albuquerque Aikikai
Introduction to Aikido
Junior Aikido

GRANTS & FINANCIAL SUPPORT

Jackson School of Geosciences Travel Grant – September, 2020 - \$500
UNM Graduate Student Assistantship – May, 2018 - \$4,786.88
NM Research Grant, High Priority – November, 2017 - \$5,000
UNM GRAC Student Research Grant – May, 2017 - \$500
UNM Graduate Student Assistantship – May, 2015 - \$3,741.84

COMMITTEE MEMBERSHIP & ACADEMIC APPOINTMENTS

New Mexico Museum of Natural History and Science
Research Associate

University of New Mexico Department of Biology
Adjunct Assistant Professor

Albuquerque United in Science (March For Science)
Social Media Co-Chair 2019-2022

Society of Vertebrate Paleontology 78th Annual Meeting
Host Committee

University of New Mexico Biology Graduate Student Association
Social Chair 2017-2019
Graduate Resource Allocations Committee Co-Chair 2017-2018

GUEST LECTURES & PUBLIC OUTREACH

Invited Lectures

New Mexico Friends of Paleontology Guest Lecture, November 2021
The influence of juvenile dinosaurs on community structure and diversity
Dallas Paleontological Society Guest Lecture, October 2021

Science Museum of Virginia Lunch Break Science, September 2021
The influence of juvenile dinosaurs on community structure and diversity
Phillip J. Currie Dinosaur Museum Guest Lecture, August 2021

Body Size in Dinosaurs: Ecology, Ontogeny and Community Structuring
Georgia State University Biology Seminar, July 2021

Mind the gap: the impact of juvenile megatheropods on dinosaur body size distributions and global diversity
University of Edinburgh, March 2021

Community Level Non-Avian Dinosaur Body Size Distributions and the Juvenile Megatheropod Morphospecies Hypothesis
University of New Mexico Brown Bag Seminar, April 2020

Community Engagement

Fossil Finders
South Florida Science Center, Girls Excelling in Math and Science, May 2021

Examining Ontogenetic Niche Shift in Tyrannosaurs Using Dental Microwear Analysis
New Mexico Legislative Session, January, 2018

Between the Past and the Future: Conversations with a Paleomacroecologist
Albuquerque Children's Museum Explora presents Teen Science Cafe, February, 2017

T. rex, Feathers & Funny Names - Dinosaurs on Science Happy Hour
Twitch – InertiaTV

Selected Pop-Sci Interviews

- Geggel, L., First Gorgosaurus to hit auction block may sell for \$8 million. *Live Science* (2022)
- Dvorsky, G., How Do We Know Birds are Dinosaurs. *Gizmodo* (2021).
- Goldberg, J.L., Hungry teen dinosaurs crowded out their competitors. *Science Magazine YouTube* (2021)
- Hunt, K., Hungry teenage tyrants help explain puzzling fact about dinosaur diversity. *CNN* (2021)
- Giaimo, C., The Outsized Influence of Teen T. Rex and Other Young Dinosaurs. *New York Times* (2021)
- Dunham, W., Dinosaur 'teenage terrors' crowded out the competition. *Reuters* (2021)
- Black, R., How T. rex Came to Rule the World. *Discover Magazine* (2020)
- Washington, F., Paleontologist finds mini dinosaur in western New Mexico. *Charleston News 2* (2019)

SELECTED EMPLOYMENT

2023-2024 **Yale University**

Post-Doctoral Research Associate

I am an incoming Hull Lab Donnelley Fellow performing research on the physiological and ecological responses to extreme heat in Mesozoic ecosystems.

2011-2023 **Sandia National Labs**

Member of the Technical Staff

As a Member of the Technical Staff in R&D Electrical Engineering I create design solutions for NNSA applications, based on my background researching and developing protein microarrays, flexible solar cells, Indium bonding, heterojunction bipolar transistors, and 2.5D integration for quantum computing. I work both collaboratively in diverse, interdepartmental teams and individually, and have been instrumental in the awarding of a \$20M DOE fund to implement administrative business improvements. As an independent scientist I am expected to present novel research, secure grant funding and report project status to departments within the DOE. I utilize my background in program optimization, vendor interactions and understanding of federal regulations to suggest and implement systemic process changes to improve the effectivity of our department in order to secure our mission objectives. Creation and implementation of more effective forms, ordering processes and storage systems have saved upwards of \$1.5 million per year, drastically decreased error rate, and increased security and productivity.

2015-2018 **University of New Mexico**

Teaching Assistant

As a teaching assistant I was responsible for the instruction of college undergraduate students pursuing degrees in fields of biology and medicine. Duties included weekly training meetings, creation of quizzes and exams, grading assignments, lecturing and directing students through class activities.

2009,2011 **NM Museum of Natural History**

Field Assistant

Working as an independent contractor I assisted scientists in collecting and recording paleontological data including fossils, matrix and geological survey information on week-long field excursions. Working in the Bisti De Na Zin Wilderness prepared me for field work in some of the most inhospitable areas of the southwest, and I have since explored many areas from New Mexico to Alberta.

Collections Volunteer

Working at the collections annex of the museum I helped to catalog, archive, label and organize various specimens. Screen washing and picking micro-fossils from large amounts of sediment collected at various sites was also required. In the vertebrate prep lab I led a project to design a jacket with novel materials to enable neutron scanning of the skull of the holotype of a large

tyrannosauroid, and cleaned and preserved ceratopsian material. I also assisted in the imaging of the internal structures of skulls using Aviso for use in publications.

REFERENCES

Felisa Smith, Ph.D.

Professor of Ecology and Evolutionary Biology – University of New Mexico
(505) 277-6725

David Henry, Ph.D.

Research and Development Engineer - Sandia National Laboratories
(505) 844-7142

Melissa Pardi, Ph.D.

Curator of Geology – Illinois State Museum Research and Collections Center
(505) 350-9868