

# Curriculum Vitae

## Zoe T. Kulik, PhD

NSF Postdoctoral Research Fellow

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### Research Interests

Paleohistology of fossilized hard tissues to elucidate growth strategies, life history, and trait acquisition in extinct tetrapods, with a particular emphasis on the synapsid forerunners of mammals.

### Current Position

#### **NSF EAR Postdoctoral Research Fellow**

July 2023 – present

Jointly appointed at the Negaunee Integrative Research Center, Field Museum, Chicago, IL and the Division of Paleontology, American Museum of Natural History, New York, NY

**Project Title:** Geochemical taphonomy of a rare dicynodont bonebed and its paleobiological implications for social behavior in the stem-mammalian lineage

### Education

Ph.D. Biology, University of Washington (UW), Seattle, WA Sept. 2017 – June 2023

Dissertation Title: Histological insights into growth trajectories, life history, and community age structure in the mammalian stem lineage

Supervisory committee: Christian Sidor (Advisor),

Gregory Wilson Mantilla, Tracy Popowics, and Sharlene Santana

B.A. Geology, Macalester College, St. Paul, MN May 2016

Honors Thesis Title: Testing a Titanosaur growth pattern in *Rapetosaurus krausei*

Thesis committee: Kristina Curry Rogers (Advisor), Raymond Rogers, and Andrew Elstad-Haveles

### Awards and Funding History (cumulative \$297,448)

NSF EAR Postdoctoral Research Fellowship, (**\$180,000**) 2023

RGGS-AMNH Gerstner Scholar and Theodore Roosevelt Fellow (deferred) 2023

UW Walker Family & Hoag Awards (**\$2500**) 2023

UW Graduate School Travel Funds (**\$1000**) 2022

Kathryn C. Hahn Writing Fellowship (**1Q of support**) 2022

UW Student Technology Fund, (**\$98,806**) 2021

HISTO – High-throughput Student-led Thin-section Operations

Snyder Award, UW Biology Department (**\$950**) 2020

Walker Award, UW Biology Department (**\$1000**) 2019

Iuovo Award, UW Biology Department ( <b>\$2000</b> )	2018
Jackson School of Geosciences Travel Award ( <b>\$400</b> )	2018
Iuovo Award, Biology Department, UW ( <b>\$870</b> )	2017
Hugh S. Alexander Endowed Prize, Macalester College ( <b>\$250</b> )	2016
Winchell Undergraduate Research Symposium, University of Minnesota	2016
Honorable Mention awarded for Excellence in Oral Presentation	

## Research and Curatorial Experience

Collections Management Assistant, Osteohistology Collections, Burke Museum	2020–present
3D Digitization of Vertebrate Fossil Collection, Burke Museum	2020–2021
Research Assistant and Supervisor of the Paleohistology Lab, UW	2017–present
Paleohistology Lab Manager, Macalester College, Dr. Kristina Curry Rogers	2016–2017
Summer Research Intern, Macalester College, Dr. Kristina Curry Rogers	2014, 2015
Bone Histology Lab Technician, Macalester College, Dr. Kristina Curry Rogers	2014
Paleontology Intern, Smithsonian Museum of National History, Dr. Hans Sues	2012–2013

## Publications

\* Indicates undergraduate mentee

**Kulik, Z. T.** 2023. Rare osteohistological evidence of skeletal maturity in the early diverging traversodontid *Scalenodon angustifrons* from the Middle Triassic Manda Beds of Tanzania. *Journal of Vertebrate Paleontology*. <https://doi.org/10.1080/02724634.2023.2249964>

**Kulik, Z. T.**, and C. A. Sidor. 2022. A Test of Bergmann's Rule in the Early Triassic: Latitude, Body Size, and Sampling in *Lystrosaurus*. *Paleobiology*, September, 1–15. <https://doi.org/10.1017/pab.2022.25>.

Huttenlocker, A. K., J. Botha, C. Browning, **Z. Kulik**, M. Tshibalanganda, and A. du Plessis. 2022. A Gulliver Scaloposaurus (Therapsida, Therocephalia) from the Katberg Formation of South Africa and Its Implication for Lilliput Assemblages during the Early Triassic Recovery. *Journal of African Earth Sciences* 196: 104720. <https://doi.org/10.1016/j.jafrearsci.2022.104720>.

Sidor, C.A., **Z.T. Kulik**, and A.K. Huttenlocker. 2022. A new baurioid therocephalian adds a novel component to the Lower Triassic tetrapod assemblage of the Fremouw Formation (Transantarctic Basin) of Antarctica. *Journal of Vertebrate Paleontology* 41(6). DOI:10.1080/02724634.2021.2081510

Weaver, L. N., H. Z. Fulghum, D. M. Grossnickle, W. H. Brightly, **Z. T. Kulik**, G. P. Wilson Mantilla, and M. R. Whitney. 2022. Multituberculate Mammals Show Evidence of a Life History Strategy Similar to That of Placentals, Not Marsupials. *The American Naturalist*, July. <https://doi.org/10.1086/720410>.  
Awarded: American Society of Naturalists Presidential Award, and Best Student Paper of 2022

- Kulik Z. T.**, Lungmus J. K., Angielczyk K. D., Sidor C. A. 2021. Living fast in the Triassic: New data on life history in *Lystrosaurus* (Therapsida: Dicynodontia) from northeastern Pangea. *PLoS ONE* 16(11): e0259369. <https://doi.org/10.1371/journal.pone.0259369>
- Marilao\*, L. M., **Z. T. Kulik**, and C. A. Sidor. 2020. Histology of the Preparietal: A Neomorphic Cranial Element in Dicynodont Therapsids. *Journal of Vertebrate Paleontology* 40 (2): e1770775. <https://doi.org/10.1080/02724634.2020.1770775>.
- Kulik, Z. T.**, and C. A. Sidor. 2019. The Original Boneheads: Histologic Analysis of the Pachyostotic Skull Roof in Permian Burnetiamorphs (Therapsida: Biarmosuchia). *Journal of Anatomy*, 16. DOI:[10.1111/joa.12987](https://doi.org/10.1111/joa.12987)
- Curry Rogers, K. & **Z. Kulik**. 2018. Osteohistology of *Rapetosaurus krausei* (Sauropoda: Titanosauria) from the Upper Cretaceous of Madagascar. *Journal of Vertebrate Paleontology* 38(4). DOI: [10.1080/02724634.2018.1493689](https://doi.org/10.1080/02724634.2018.1493689)

## Conference Abstracts

- Z. T. Kulik**. Histological insights into the evolution of mammalian growth trajectories from comparative histology of non-mammaliaform cynodonts. **Romer Prize Finalist**. Society of Vertebrate Paleontology Annual Meeting. 2023
- R. Smith, C. Sidor, K. Angielczyk, S. Nesbitt, N. Tabor, **Z. Kulik**. Taphonomy of Middle Triassic bone accumulations in the Ruhuhu Basin Manda Beds of Tanzania: evidence for pluvial episodes? 29<sup>th</sup> Colloquium of African Geology. 2023
- Z. T. Kulik** & C.A. Sidor. Age-structure in a multitaxic cynodont assemblage from the Middle Triassic Manda Beds of Tanzania. Society of Integrative and Comparative Biology Annual Meeting. 2023
- Z. T. Kulik** & C.A. Sidor. Assessing age structure in a multitaxic cynodont assemblage from the middle Triassic Manda Beds of Tanzania. Society of Vertebrate Paleontology Annual Meeting. 2022
- A. Huttenlocker, **Z.T. Kulik**, C. Sidor. New bauriamorph records from the early Triassic of southern Pangea test the principle of geographic exclusion in the global radiation of baurioids and cynodonts (Synapsida). Society of Vertebrate Paleontology Annual Meeting. 2022
- C. Sidor, B. Gee, W.R. Hammer, A. Huttenlocker, **Z.T. Kulik**, P. Makovicky, J. Mcintosh, N.D. Smith, N.J. Tabor, M.R. Whitney. The fossil record of the Triassic Fremouw Formation (Antarctica): history of collecting and a new bauriamorph (Therapsida: Therocephalia). Society of Vertebrate Paleontology Annual Meeting. 2022

- Z. T. Kulik**, & C.A. Sidor. New evidence of early Triassic *Lystrosaurus* life histories from northwestern China. Triassic Vertebrate Paleontology Meetup 2021
- L.N. Weaver, H.Z. Fulghum, D.M. Grossnickle, W.H. Brightly, **Z.T. Kulik**, G.P. Wilson Mantilla, and M.R. Whitney. Multituberculate mammals show evidence of a life history strategy similar to placentals, not marsupials. American Society of Mammologists 2021
- Z. T. Kulik**, C.A. Sidor, K.D. Angielczyk & J. Liu. Body size and life history in *Lystrosaurus*: New insights from the Early Triassic of northwestern China. The Geological Society of America Connects Online meeting 2020
- Z. T. Kulik** & C.A. Sidor. Body size and paleolatitude in *Lystrosaurus*: Did Bergmann's Rule apply during the early Triassic? Society of Vertebrate Paleontology Annual Meeting 2020
- Sidor, C.A., B.M. Gee, **Z. T. Kulik**, P.J. Makovicky, J. McIntosh, N.D. Smith, R.M. Smith, N.J. Tabor & M. Whitney. The first vertebrate assemblage from the middle Fremouw formation (Triassic) of Antarctica. Society of Vertebrate Paleontology Annual Meeting. 2020
- Marilao\*, L.M., **Z.T. Kulik** & C.A. Sidor. Neomorphic ossifications: Histological insight into the preparietal of dicynodont therapsids. Society of Vertebrate Paleontology Annual Meeting. 2020
- Kulik, Z. T.**, L.M. Marilao\*, C.A. Sidor. More than one way to be a boss: Histological perspectives on cranial boss development and its effect on suture morphologies. Society of Vertebrate Paleontology Annual Meeting. 2019
- Kulik, Z. T.** & C.A. Sidor. Comparative Cranial Histology of the Pachyostotic and Non-pachyostotic skull in Permian Burnetiamorphs (Therapsida: Biarmosuchia) and Gorgonopsians (Therapsida: Gorgonopsia). International Symposium on Paleohistology. 2019
- Kulik, Z. T.** & C.A. Sidor. Comparative Cranial Histology of the Pachyostotic and Non-pachyostotic skull in Permian Burnetiamorphs (Therapsida: Biarmosuchia) and Gorgonopsians (Therapsida: Gorgonopsia). Western Association of Vertebrate Paleontology. 2018
- Kulik, Z. T.** & C.A. Sidor. The Original Boneheads: Histological analysis of the pachyostotic cranial vault in Permian burnetiamorphs (Therapsida: Biarmosuchia). Society of Vertebrate Paleontology Annual Meeting. 2018
- C. A. Sidor, B. R. Peacock, C. V. Beightol, T. Kaye, **Z. T. Kulik**, G. Livingston, 2018

W. G. Parker, S. L. Olroyd, M. R. Whitney. A multitaxic bonebed from the Sonsela Member of the Chinle Formation at Petrified Forest National Park. Society of Vertebrate Paleontology Annual Meeting.

Curry Rogers, K. A., **Z. Kulik**, H. N. Bui, and M. R. Whitney. Titanosaur paleobiology: insights from *Rapetosaurus krausei* (Maevarano Formation, Madagascar). 2018  
5th International Palaeontological Congress.

**Kulik, Z.** & K. Curry Rogers. Comparative Osteohistology of *Rapetosaurus krausei* (Sauropoda: Titanosauria) from the Late Cretaceous of Madagascar. Society of Vertebrate Paleontology Annual Meeting. 2016

**Kulik, Z.** & K. Curry Rogers. Fossilized Bone Tissue Organization Sheds Light on Titanosaur Growth Patterns in *Rapetosaurus krausei*. Winchell Undergraduate Research Symposium, University of Minnesota. 2016

**Kulik, Z.** & K. Curry Rogers. Testing a Titanosaur Growth Pattern in *Rapetosaurus krausei*. Midstates Undergraduate Research Symposium in the Physical Sciences, Math, and Computer Science, University of Chicago. 2015

### Fieldwork

Chinle Formation (Triassic), Arizona, USA	2017–present
Hell Creek Formation (Cretaceous), Montana, USA	2014, 2022
Judith River Formation (Cretaceous), Montana, USA	2014–2015
Grotto Beach Formation (Pleistocene), San Salvador Island, Bahamas	2014

### Collections Experience

Institute of Vertebrate Paleontology and Paleoanthropology, Beijing, China  
Iziko, The South African Museum, Cape Town, South Africa  
Evolutionary Studies Institute, Johannesburg, South Africa  
National Museum, Bloemfontein, South Africa  
Smithsonian Museum of Natural History, Washington D.C., USA  
American Museum of Natural History, New York, USA  
Field Museum of Natural History, Chicago, USA  
Burke Museum of Natural History, Seattle, USA

## Educational & Outreach Activities

### Teaching Experience (iteration of TAships in parentheses)

UW Biology 453: Comparative Anatomy of Vertebrates (4)

UW Biology 450: Vertebrate Paleontology (2)

UW Biology 417: Comparative Reproductive Physiology of Vertebrates  
UW Biology 310: Human Anatomy Survey  
UW Biology 200: Introductory Biology (Molecular Biology and Genetics)  
UW Biology 180: Introductory Biology (Evolution and Ecology) (2)  
Macalester College Geology 101: Dinosaurs  
Macalester College Geology 300: Paleobiology  
Macalester College Biology 365: Comparative Vertebrate Anatomy

## **Pedagogical Development**

### *UW Biology 505: Teaching Undergraduate Biology for Diverse Audiences*

Graduate-level course taught by Scott Freeman focusing on developing skills in teaching science to students at any level. Coursework included reviewing evidence-based approaches to making STEM accessible, particularly to minoritized populations, accessible course structure and content, implementing active learning, and “backwards designed” syllabi and exam structure.

### *SCI STEM: Strategies for Cultivating Inclusion in STEM, University of Washington*

Conference of workshops and talks focused on best practices for inclusive STEM classrooms and research labs.

## **Invited Lectures (*Italicized title*)**

Loyola University Chicago: BIOL 395 Vertebrate Paleontology

*Lystrosaurus as a model organism in deep time*

UW Biology: BIOL 450 Vertebrate Paleontology

*Evolution of Hard Tissues*

*Dinosaur Origins and Evolution*

*Endothermy in the Fossil Record*

UW Biology: BIOL 453 Comparative Vertebrate Anatomy

*From Fins to Limbs*

*Evolution of Flight*

UW Biology: BIOL 417 Reproductive Physiology of Vertebrates

*Parental Care in Archosaurs*

## **Mentored Student Researchers and Burke Museum Volunteers**

*Italicized = project title*

Underline = funding source

Kimberly Schoenberger (UW Biology undergraduate)

*3-Dimensional and functional morphology of an arboreal cynodont*

Currently a PhD student at USC, co-advised in Edmands and Wang Labs

Bernard Bazar (UW Biology undergraduate)

*Estimating bone tissue porosity in non-mammalian cynodonts*

Lianna Marilao (UW Biology undergraduate)

*Histology of the preparietal: a neomorphic cranial element in dicynodont therapsids*

UW Undergraduate Biology Research Award

Currently a PhD student at OSU, Barta Lab

Julia Ricks and Sophia Powers

*Curating fossils from the Permian and Triassic of Tanzania and Zambia, UW Burke Museum*

### **Outreach Teaching**

UW Burke Museum Dino Days; Behind the Scenes Nights; Darwin Day 2017–2023  
Outreach events where visitors interact with fossils and engage with paleontologists and other museum staff.

D.I.G. Field School Instructor 2022  
Program for K-12 teachers to gain hands-on paleontology experience in SE Montana

#### *Ask a Paleontologist*

Viewlands Elementary School, Seattle, WA – 2<sup>nd</sup> and 3<sup>rd</sup> Grades 2021

Van Asselt Elementary School, Seattle, WA – 3<sup>rd</sup> Grade 2019

Geological Society of Minnesota Outreach Teacher 2016–2017  
I taught hands-on STEM activities using rocks and fossils to local elementary schools, boy and girl scout troupes, and teen science nights.

## Academic Service

**Associate Editor** 2023–present  
*Journal of Vertebrate Paleontology*

#### **Peer Reviewer for:**

iScience

Journal of Anatomy

Nature

Palaeontologia Africana

PeerJ

PLOS ONE

#### *Professional Society Service*

### **The Society of Vertebrate Paleontology**

Diversity Committee Member 2019–2021

Women in Paleontology Workshop Co-host and presenter 2018–2019

Diversity in SVP Luncheon Co-organizer and host 2017–2021

Student Roundtable host: Women in Paleontology 2018–2019

*Academic Service*

**Burke Museum of Natural History and Culture, Seattle WA**

Served on the Host Committee for the Association of Materials & Methods in Paleontology (AMMP) Annual Meeting, Seattle, WA 2022

Coordinated and led the Paleohistology Workshop, a 1-day intensive workshop geared to introduce paleohistology methods and techniques to AMMP attendees.

**University of Washington, Department of Biology**

Seminar Speaker 2022–2023

Presented quarterly research seminars to the Biology Department

Graduate Program Committee Member 2020–2022

Developed and implemented a survey to review the effectiveness of the first- and second-year experiences of UW graduate students, including progressing through the general exam. Actionable items were presented in faculty meetings to improve the graduate program structure.

Graduate and Postdoctoral Departmental Awards Grant Panelist 2020–2022

Served on an NSF-style review panel for competitive graduate student awards.

Graduate Recruitment Coordinator and Host 2020–2022

Organized and co-hosted events for over 80 prospective Biology graduate students.

Social Committee Co-organizer

Funded and organized monthly departmental happy hours and annual graduate student retreats. 2017–2019

Graduate Student Research Symposium Moderator 2018