

Matthew L. Allen, PhD

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CURRENT POSITION	<i>National Science Foundation Postdoctoral Fellow (EAR-PF)</i> University of Michigan, Ann Arbor, MI	2024–2026
EXPERTISE	Stable Isotope Geochemistry; Paleoclimatology; Paleontology; Stratigraphy	
ACADEMIC BACKGROUND	<i>Ph.D. Geology</i> , University of Kansas, Lawrence, KS Advisor: Marina B. Suarez Dissertation: <i>Geochemical Approaches to Paleoecology and Paleoclimatology of the Cretaceous Cloverly Formation</i>	2024
	<i>M.Sc. Geology</i> , University of Texas at San Antonio, TX Advisor: Lance L. Lambert Thesis: <i>New Permian Ammonoid Localities at Sibley's Last Chance Ranch, Delaware Mountains, Culberson County, TX</i>	2016
	<i>B.S. Geology</i> , University of Alabama, Tuscaloosa, AL	2013
GRANTS AND FELLOWSHIPS	<i>NSF-EAR Postdoctoral Fellowship (EAR-PF)</i> , National Science Foundation Project: Applying triple oxygen isotopes across the Paleocene–Eocene Thermal Maximum in the Bighorn Basin, Wyoming.	2024–2026
	<i>Student Research Grant</i> , SEPM Foundation Project: Evaluation of a possible major unconformity in fluvial deposits of the Early Cretaceous Cloverly Formation, Wyoming.	2024
RESEARCH EXPERIENCE	<i>NSF-EAR Postdoctoral Fellow</i> , University of Michigan, Ann Arbor, MI Conduct independent research on hydroclimate change across the Paleocene–Eocene Thermal Maximum using triple oxygen isotopes from mammal fossils and pedogenic carbonates in the Bighorn Basin. Operate and maintain stable isotope mass spectrometers and supervise data quality in high-precision isotope analyses. Mentor undergraduate and graduate students in laboratory methods and research design.	2024–Present
	<i>Graduate Research Assistant</i> , University of Kansas, Lawrence, KS Investigated paleoclimate and paleoecology of the Cretaceous Cloverly Formation primarily using stable isotope geochemistry and related methods. Developed datasets that contributed to peer-reviewed manuscripts on isotope paleoecology, chemostratigraphy, and mid-Cretaceous climate variability. Supervised undergraduate researchers in sampling, lab preparation, and data analysis.	2022–2024

Undergraduate Research Assistant, University of Alabama, Tuscaloosa, AL 2011–2012
Contributed to stable isotope analyses of invertebrate bioapatite through microsampling and thin section preparation.

TEACHING EXPERIENCE

Graduate Teaching Assistant 2020–2021

University of Kansas, Lawrence, KS

Lead instructor for introductory geology; taught paleontology lab; administered intro geology labs.

Graduate Teaching Assistant 2013–2015

University of Texas at San Antonio, TX

Taught sedimentology/stratigraphy and paleontology labs; assisted with intro geology labs.

INDUSTRY EXPERIENCE

Senior Geologist 2019–2020

Zachry Exploration LLC., San Antonio, TX

Developed exploration campaigns using logs, production data, and 3D seismic; oversaw wireline well-logging at drill sites.

Geologist 2015–2019

Zachry Exploration LLC., San Antonio, TX

Characterized basin- and reservoir-scale geology; evaluated prospect proposals; supervised wireline logging.

PUBLICATIONS

Peer-Reviewed Articles

Allen, M.L., Suarez, M.B., Adams, T.L., and Suarez, C.A., 2025. Ecohydrology and paleoenvironment of the Cretaceous (Albian) Cloverly Formation: insights from multi-taxon oxygen isotope analysis of vertebrate phosphates. *Frontiers in Earth Science* **13**:1497416. [doi:10.3389/feart.2025.1497416](https://doi.org/10.3389/feart.2025.1497416)

Manuscripts in Preparation (selected)

Allen, M.L., Suarez, M.B., Kalu, Q., Suarez, C., and Hyland, E. (in preparation). Mid-Cretaceous Hydroclimate Variability in the Cloverly Formation: Insights from Multi-Proxy Reconstruction Target journal: *GSA Special Publication*.

Allen, M.L., Suarez, M.B., Kalu, Q., and Suarez, C. (in preparation). High Resolution Carbon Isotope Stratigraphy and U-Pb Zircon Geochronology of the Mid-Cretaceous Cloverly Formation Target journal: *Geosciences*.

Published Abstracts

Kalu, Q.A., Suarez, C.A., Sharman, G., Suarez, M.B., Allen, M., and D’Emic, M. (2023). pCO₂ calculations from Cloverly Formation in northern Wyoming using pedogenic carbonate nodules. *Anatomical Record*, 306(S1): 154–156. Special Issue: 14th Symposium on Mesozoic Terrestrial Ecosystems and Biota, June 2023.

Radermacher, V.J., Makovicky, P., Suarez, C.A., Suarez, M.B., and Allen, M. (2023). Nodosaur track (*Tetrapodosaurus*) from the Early Cretaceous Sykes Mountain Formation of Wyoming. *Journal of Vertebrate Paleontology, Program and Abstracts*, 2023.

INVITED PRESENTATIONS

Allen, M.L. (forthcoming January 2026). *Bridging Realms: Mid-Cretaceous Climate, Life, and Tectonics on Land and at Sea*. Invited talk, South Texas Geological Society luncheon, San Antonio, TX.

CONFERENCE PRESENTATIONS

Lead / Presenting Author

Allen, M.L., and Suarez, M.B., 2022. Niche partitioning and paleohydrology: multi-taxa oxygen isotopic analysis of vertebrate phosphates, Cretaceous Cloverly Formation, Montana, USA. *GSA Abstracts with Programs* **54**(5). [doi:10.1130/abs/2022AM-382377](https://doi.org/10.1130/abs/2022AM-382377).

Allen, M.L., Coombs, N.J., Makovicky, P.J., and Suarez, M.B., 2022. Faunal comparison of Aptian–Albian continental vertebrates, North American WIB: biostratigraphic and biogeographic context. *GSA Abstracts with Programs* **54**(5). [doi:10.1130/abs/2022AM-383041](https://doi.org/10.1130/abs/2022AM-383041).

Allen, M.L., and Lambert, L.L., 2019. New morphometric methods to quantify complex ammonoid sutures. *GSA Abstracts with Programs* **51**(5). [doi:10.1130/abs/2019AM-337565](https://doi.org/10.1130/abs/2019AM-337565).

Allen, M.L., and Lambert, L.L., 2017. The continuing significance of Sibley Ranch localities (Culberson County, Texas) to Guadalupian (Middle Permian Series) ammonoid research. *GSA Abstracts with Programs* **49**(6). [doi:10.1130/abs/2017AM-308319](https://doi.org/10.1130/abs/2017AM-308319).

Allen, M.L., and Lambert, L.L., 2014. Sequence stratigraphic and biostratigraphic correlation of the North American Atokan/Desmoinesian boundary to the Donets Basin, Ukraine. *Proceedings, College of Science Research Conference*, University of Texas at San Antonio, p. 109.

Co-author

Wolf, A., Cole, J.E., Allen, M.L., Geng, J., Langston, J., Passey, B.H., Patterson, E.W., Baker, J.L., Johnson, K.R., McGee, D., and Griffiths, M., 2025. Quantifying cave-internal alterations in speleothems using triple oxygen isotopes. *GSA Abstracts with Programs*, Session: Caves and Karst Through Space and Time.

Suarez, M.B., Allen, M.L., and Suarez, C.A. (2025). Multi-taxon oxygen isotope analysis of bioapatites from the Cloverly Formation, Wyoming. Geological Society of America Annual Meeting, Spokane, WA, May 2025.

Fekete, J., Sharman, G., Suarez, C., Suarez, M.B., Zanno, L.E., Tucker, R.T., Lupia, R., Makovicky, P.J., Crowley, J.L., Forster, C., Kalu, Q., Allen, M.L., and Biebesheimer, E. (2025). Refined geochronologic framework of the Early Cretaceous nonmarine Western Interior Basin. Geological Society of America Annual Meeting, Provo, UT, May 2025.

Lambert, L. L., Vote, J. J., Allen, M.L. and Lewis, D., 2018, Old localities and new specimens—Family Cyclolobidae (Middle and Late Permian) are more complex and diverse than thought. In: A. El Hassani, R. T. Becker, S. Hartenfels, and F. Luddecke (eds.), *10th International Symposium “Cephalopods – Present and Past”, Program and Abstracts*, Munstersche Forschungen zur Geologie und Palaontologie, 110:70.

PROFESSIONAL SERVICE Co-chair, topical session *Cephalopods Through Time: Insights into Evolution, Ecology, and Environmental Reconstruction*, Geological Society of America Annual Meeting (GSA Connects 2025), San Antonio, TX, October 2025.

Manuscript reviewer for *Journal of Paleontology* (2025)

Manuscript reviewer for *Geological Society of America Bulletin* (2025)

Co-founder, Board Member, KU Geology Graduate Student Organization (2022–2023)

Vice President, South Texas Geological Society (2019–2020)

PROFESSIONAL MEMBERSHIPS	Geological Society of America (GSA)	2016–present
	American Geophysical Union (AGU)	2024–present
	American Association of Petroleum Geologists (AAPG)	2014–2019

OUTREACH AND COMMUNITY ENGAGEMENT	<i>Science Communication Fellow</i> , University of Michigan	2025
	Completed NSF-supported Portal to the Public program. Participated in five professional development workshops on public engagement, developed inquiry-based activities, and presented research at two community outreach events.	

Invited Presenter, Perry Elementary Mad Science Festival, Ann Arbor, MI. Presented an interactive demonstration on isotope research and paleoclimate. Spring 2025

Coach, Meteorology Science Olympiad, Slauson Middle School, Ann Arbor, MI (Fall 2025).

Presenter, Museum ID Day, University of Michigan Museum of Natural History (forthcoming). 2025

Organizer and Presenter, KU Geology Open House, Lawrence, KS. Coordinated department-wide outreach event for families and school children; led activities on fossils and Earth history. 2023

	Presenter, Girls Inc. RockIT Into the Future Science Festival, San Antonio, TX. Designed and led interactive STEM exhibits for middle school girls. 2019–2020	
	Classroom presentations at elementary schools in San Antonio, introducing students to fossils and Earth history.	2016–2019
COMMUNITY SERVICE AND LEADERSHIP	Vice President, Boerne Chapter, Native Plant Society of Texas	2019–2020
	Area Chief Volunteer, Texas Parks and Wildlife	2016–2019
	Texas State Coordinator, Fishing’s Future	2016–2019
	Chairman, Boerne Chapter, Ducks Unlimited	2016–2018
	Founder, President, University of Alabama Fly Fishing Club	2012–2013