

M | LSA MUSEUM OF PALEONTOLOGY

UNIVERSITY OF MICHIGAN

2022-2023 YEAR IN REVIEW



University of Michigan Museum of Paleontology

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DIRECTOR'S NOTE

Dear friends and colleagues,

Warm greetings from the University of Michigan Museum of Paleontology! The number of developments in UMMP of late has been dizzying, and I hope that this newsletter gives a sense of a fraction of what our community has accomplished over the 2022-2023 academic year. After a long period disrupted by facility moves and the pandemic, it is wonderful to see so much activity in our collections, labs, and classrooms. We've also renewed museum traditions long put on hold: only a few weeks ago the UMMP community gathered to celebrate our first Case Lecture since late 2019.



The appointment of Dr. Mónica Carvahlo as Assistant Curator in UMMP and Assistant Professor in the Department of Earth and Environmental Sciences represents a key highlight of the past year. Mónica, who started in January of 2023, has a remarkably diverse research program in paleobotany. She is poised to take us in exciting new directions here at Michigan. This year we also welcomed Lindsay Dorosh to the UMMP team. Lindsay serves as our coordinator of digital communications and publications. She helps share what's happening in the museum, which of course includes putting together this newsletter!

2022-2023 was an outstanding year for members of the UMMP community. Museum researchers were instrumental players in a series of significant discoveries that featured in prominent journals and attracted worldwide attention. You'll learn more about some of these in featurettes on later pages, but check out the list of publications at the end of this newsletter to see the full range of scientific contributions from our community. Members of UMMP past and present received major accolades from academic societies and netted prestigious fellowships and grants. We also celebrated two successful dissertation defenses in 2022, and two research fellows associated with UMMP moved on to begin tenure-track positions.

This past year was also marked by the sad passing of Curator Emeritus Gerald Smith in September. Jerry was a fixture of UMMP and the wider paleontology and biology community at Michigan, where he was based for parts of seven decades including his time as a PhD student. An article in this newsletter captures only a sliver of the impact he had on the museum and his colleagues over the years. A flood of generous donations to UMMP's George Junne Fund in Jerry's memory ensure that this will be an enduring resource to help support fieldwork experiences for aspiring paleontologists from underrepresented backgrounds.

The next year promises to bring exciting developments. Three candidates accepted offers from UMMP curators to pursue graduate degrees in Earth and Environmental Sciences, growing our graduate cohort. All those extra hands will be essential as we approach a pair of major events. First, our grad student community is preparing to host the Great Lakes Student Paleoconference in fall of 2023. This informal meeting gives paleontology students and postdocs from across the region an opportunity to gather, network, and share research in a causal setting. Second, we are excited to host the North American Paleontological Convention from 17-21 of June 2024. We hope to see many of you then, so you can take in all of the exciting developments for paleontology at Michigan.

- Matt Friedman, Director of the University of Michigan Museum of Paleontology

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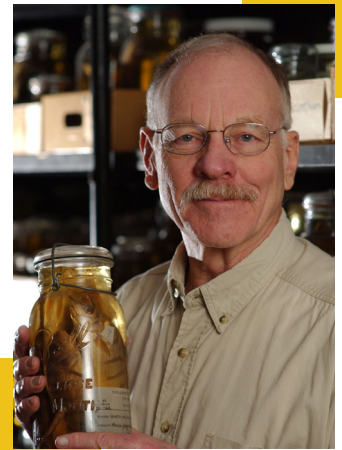
Remembering Gerald R. Smith

University of Michigan Professor and Curator Emeritus, Gerald R. Smith, passed away on September 20, 2022, leaving behind an outstanding legacy in the field of paleontology. Smith received his B.S. and M.S. degrees from the University of Utah, and a Ph.D. in Zoology from the University of Michigan. He began as an assistant professor and assistant curator at the University of Michigan, later becoming a curator and professor. He also served as the director of the Museum of Paleontology, the Museum of Zoology and the Herbarium. Smith specialized in the evolution of North American freshwater fishes, with a particular interest in Cenozoic fossils from the northwest United States. He was widely recognized for his work and mentored many graduate students throughout his career.

During his life, Jerry was widely recognized for his outstanding work. He inspired dozens of graduate students at the University of Michigan and numerous research collaborators. Anne Curzan, Dean of the College of Literature, Science, and the Arts at Michigan summarized these accomplishments: "Jerry received many accolades for his passionate research on the evolution of fishes, both during his lifetime and posthumously, and I strongly believe that mentoring scholars throughout his lengthy teaching career must have been among his proudest achievements. It is not hard to imagine the pride he had in the Museum of Paleontology's dedication to providing scholars with an invaluable research tool—the ability to physically examine specimens." Those collections-based resources represent one of Jerry's lasting contributions to the Museum of Paleontology.

Jerry's impact on his students is particularly noteworthy. "One of Jerry's strengths was his uncanny ability to see a biological data set--whether ecological, genetic, fossil, or whatever, and instantly perceive that there were some questions to be asked and potential answers that could be tested," notes Ralph Stearley, a student of Jerry's (PhD 1990) and professor emeritus at Calvin University. "In many cases, these answers had direct application to the conservation of rare and endangered fishes and the aquatic systems that they inhabit." Jerry's legacy of mentorship lives on in those he taught. "Jerry is the reason I ended up in academia," recalls John Whitlock, Associate Professor at Mount Aloysius College and former Smith student (MSc 2005, PhD 2010). "Through him, I learned how to be a scientist - not just how to do science, but how to be a colleague, how to help students grow and learn, and how to be a positive contributor to our academic community. I think about him every time I have to advise a student, to be honest."

Next of kin have asked for donations in Jerry's memory be made to the George Junne Fieldwork Internship Award Fund (account 337670). Established by Jerry Smith and Catherine Badgley, the fund supports students from underrepresented backgrounds in accompanying Michigan paleontologists on fieldwork.



George Junne Fund Becomes Endowed

Thanks to many generous donation made in honor or Gerald R. Smith, the George Junne fund, now an endowment fund, will be able to support students from underrepresented backgrounds in accompanying Michigan paleontologists on fieldwork for many years to come,

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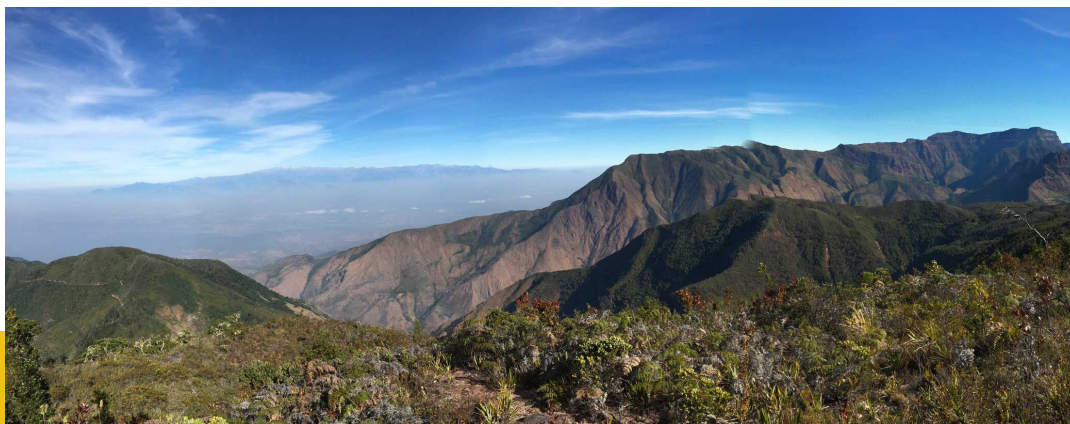
Dinosaur Discovery in Colombia

An international team of researchers have described a new species of sauropod dinosaur that lived in northern Colombia around 175 million years ago. The species, named *Perijasaurus lapaz*, was identified from a single trunk vertebra that is about half a meter tall and wide, found in the Serranía del Perijá, near the border between Colombia and Venezuela. The name relates to the peace accords in Colombia that allowed the team to access the original fossil site. The dinosaur's bony struts in the vertebra allowed the team to identify it as a new species and place it within the sauropod family tree. *Perijasaurus* is the northernmost known occurrence of a sauropod in South America and gives us insight into the early evolutionary history of these large, long-necked, plant-eating dinosaurs.

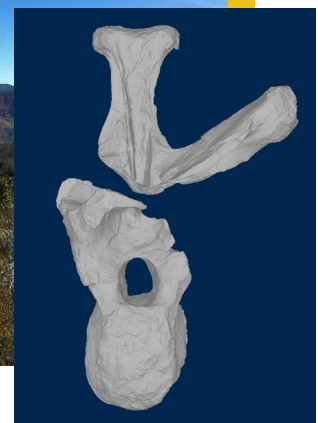


The University of Michigan and the Universidad del Norte in Colombia were both involved in the study of the new sauropod dinosaur species. The specimen was first discovered in 1943 by the Tropical Oil Company during a geological mapping campaign. It was then taken to the collections of the University of California, Berkeley, and briefly described in 1955. University of Michigan paleontology curator and professor Jeff Wilson Mantilla examined the specimen as a graduate student in 1997 and later developed a project supported by the Fulbright Foundation to study early sauropod evolution in Colombia. As part of that project, the Colombian specimen was loaned to Michigan, where chief preparator William Sanders removed glues and plaster, greatly increasing the visibility of anatomical details, and reducing the total weight of the sample. The team of researchers led by Aldo Rincón Burbano, a professor of physics and geosciences at the Universidad del Norte in Colombia, conducted the morphological study of the specimen and help identify it as a new genus and species.

In addition, The University of Michigan Online Repository of Fossils hosts a 3D model of the specimen which was used for further study and analysis. The full article published by the University of Michigan Press Office can be found [here](#).



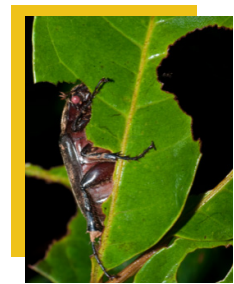
Panoramic view of the Serranía del Perijá in Colombia, where the vertebra was found in 1943.
Image credit: Jeff Wilson Mantilla, University of Michigan



Visualization of the vertebra of *Perijasaurus*.
Image credit: UMORF viewer developed by UMMP

Museum of Paleontology Welcomes New Curator

UMMP is proud to welcome a new curator to our team, Mónica Carvalho. Mónica investigates how plants and tropical ecosystems have changed through geologic time. Mónica collects and studies plant fossils in tropical South America, and uses observational and experimental approaches to better understand the paleobiology and evolution of tropical rainforests. Her work documents how interactions between plants and insect herbivores are recorded in leaf damage, form-function relations of leaves, and how acclimation responses of tropical plants to climate change can inform ecosystem function in deep time. Mónica received her Master's in Geosciences from the Pennsylvania State University and her PhD in Plant Biology from Cornell university. She was a postdoctoral researcher at the Smithsonian Tropical Research Institute before joining UMMP.



UMMP to Host North American Paleontological Convention in 2024



**12th NORTH AMERICAN
PALEONTOLOGICAL CONVENTION**
University of Michigan 17-21 June 2024

Save the date for the upcoming 12th North American Paleontological Convention, which will be held at the University of Michigan from June 17-21, 2024. NAPC brings together professionals, graduate and undergraduate students, avocational paleontologists, and interested members of the public from all over the world. The meeting covers all branches of paleontology, including vertebrate, invertebrate, paleobotany, micropaleontology, paleo-related organic and inorganic geochemistry, paleoecology, paleoclimatology, and astrobiology, and provides a forum for exchanging research findings, defining future directions,

and fostering relaxed interactions within the paleontological community at large. We plan to feature a wide variety of symposia and topical sessions, along with associated workshops and other forums, varied field trips, and technical workshops. We are excited to offer a diverse program and look forward to welcoming you to the University of Michigan in 2024! You can find more information about the convention, including registration details, symposia, workshops, and field trips, on our **website**. Additionally, you can follow @NAPC2024 on **Instagram**, **Twitter** and **Facebook** for updates and news about the event.

Support the UMMP:



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Updates From the Friends of the Museum of Paleontology

As we roll into 2023 I look forward to more adventures with the Friends of the University of Michigan Museum of Paleontology (or simply the FUMMP or the Friends). The pandemic brought on many challenges but also some helpful new innovations, not least of which was the need to use Zoom for our meetings and events. Certainly not as satisfactory as meeting in person, it was also certainly better than not meeting at all. The best consequence of Zoom meetings became the regular guest lecturers we were able to have from anywhere in the world. Guest lectures have now become a regular aspect of our meetings on a vast array of paleontological topics.

While 2022 saw the welcomed return of live meetings, we retained the Zoom option for those who could not be in person as well as for guest presentations. We hope to better refine this hybrid operation this year.

Through it all we still managed to sponsor field trips to various locations including the Silurian of Bradford, Ohio, the Devonian of Alpena and Milan, Michigan, and the Mississippian of Jackson, Michigan.

Anyone with a passion for paleo can join us through membership in the FUMMP. Individual membership is still only \$20 a family.

Benefits include:

- Ability to assist with the research of top-notch scientists at the University of Michigan Museum of Paleontology
- Engage in public outreach at the annual ID Day at the Museum
- Exclusive access to our field trips in various quarries, which do not allow the general public
- On-line Archive of FUMMP materials, including past meeting minutes and Newsletters
- Learn how to properly identify, prepare, and preserve fossils and generally engage with fossil collectors and other like-minded individuals of all experience levels

Additional information can be accessed through [this link](#), or by contacting me directly.

Michael Lask
President, FUMMP
fummpinfo@gmail.com



Notable Award to FUMMP Member

Joe Koniecki, longstanding member of the Friends of the UMMP, received the Paleontological Society's Harrell L. Strimple Award in recognition of his substantial contributions to the discipline as a non-professional.

Koniecki is an expert fossil collector, preparator, and exhibitor.



Follow @UMichPaleo on Twitter!

HAPPENINGS WITH THE U-M MUSEUM OF PALEONTOLOGY

COLLECTIONS



NEW UMMP HOLOTYPES

Alestocrinus baumilleri Gahn (2022) Mississippian crinoid (UMMP 75465) (1)



TAXA NAMED BY UMMP RESEARCHERS

Iridopristis parrisi Andrews et al. (2023) Paleocene squirrelfish from New Jersey (2)

Indoclemensia magnus Mantilla Wilson et al. (2022) Late Cretaceous mammal from India

Perijasaurus lapaz Mantilla Wilson et al. (2022) Late Cretaceous mammal from India (3)

Palaeonieros clackorum Giles et al. (2022) Late Devonian ray-finned fish from Pennsylvania

Ceratopetalum suciensis Tang et al. (2022) Late Cretaceous dicot plant from Washington



1



2



3

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HAPPENINGS WITH THE UMMP



IDIGBIO SUMMER INTERNSHIP PROGRAM

UMMP hosted interns participating in the iDigBio Natural History Collections Summer Internship. Designed to help non-traditional students engage with natural history collections, this 8-week program employed students 'help with the digitization, curation, and research efforts in their lab, with options to complete their own research project,' according to the iDigBio website.



THOMAS BAUMILLER VOLUME IN CONTRIBUTIONS



A CELEBRATION OF THE WORK AND CAREER OF TOMASZ K. BAUMILLER

Improving Our Understanding of Evolutionary Paleoecology: A Celebration of the Work and Career of Tomasz K. Baumiller, is a special volume in *Contributions from the Museum of Paleontology, University of Michigan*. Thirteen articles highlight the work of Baumiller, Museum of Paleontology Curator Emeritus, in celebration of his retirement.

A special thank you to Jennifer E. Bauer and William I. Ausich, who worked as special editors for this volume.

Digital copies are available and can be found on the University of Michigan's digital library, Deep Blue.



COLLECTIONS ACTIVITY



DONATION PROVIDES SNAPSHOT OF PLEISTOCENE ECOSYSTEM

In 1990, UMMP Curator Daniel Fisher was excavating the Heisler mastodon site in southern Michigan when he was approached by Professor Alan Morgan from University of Waterloo who wanted to survey Pleistocene insects at the site. The project was completed years later and Morgan's retirement led to discussion of a repository for the collection. Fisher was interested in housing the material at UMMP. The collection will reunite the vertebrate and arthropod components of the Pleistocene site and is one of few such collections in the North American midcontinent.

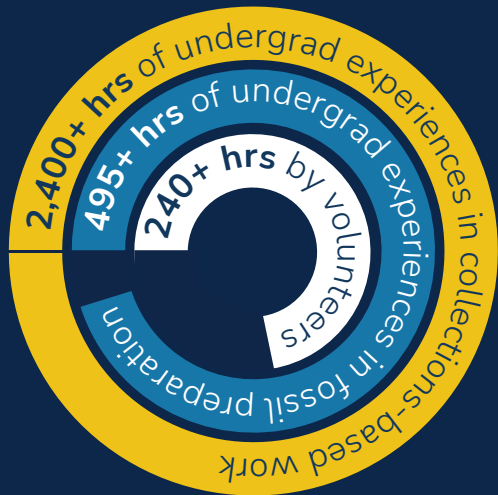
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HAPPENINGS WITH THE UMMP

UMMP BY THE NUMBERS



140+

Loaned Specimens

900+

Specimens Donated

3,300+

Specimens Cataloged

1300+

First-year Students
Given Collections Tours

97

3D Models Added to
UMORF

150+

Public Inquires

29,000+

UMORF Sessions

COMINGS AND GOINGS



DEPARTING GRADUATES



Defended in 2022:

Kierstin Rosenbach, Meg Veitch



DEPARTING POSTDOCS



Departing museum affiliates 2022:

Carlos Peredo (now assistant professor, Miami University), Mathew Kolmann (now assistant professor, University of Louisville)

SPECIAL THANKS



2022-2023 VOLUNTEERS

Dave Thompson, Sally Labadie, Doug Scales, Maddie Holderbaum, Zoë Simmons, Blake Briggs, John Klausmeyer, Jackson Eccles, & Kaori Chambers

Giving Opportunities to Support Students at UMMP

Consider giving to the [George Junne Internship Fieldwork Award Fund](#) and help financially support students not traditionally represented in paleontology to participate in opportunities to join UMMP researchers and faculty on field work across the world.

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RECOGNIZING UNDERGRADUATE CONTRIBUTIONS TO UMMP

Andrew Colon, Class of 2023

Music and Paleontology
Skull conservation and skeletal preparation

Anna Hipp Kaplan, Class of 2024*

Mathematics & Statistics
General digitization and processing of fossils

Antonio Beaudrie, Class of 2026*

Astrophysics
Georeferencing fossil locality data

Austin Babut, Class of 2024

Fine Arts and Paleontology
Preparation of Danian age fish from Egypt

Beatrix Dergis, Class of 2023

Anthropology
Conservation and rehousing of fossil fishes

Ben Aulicino, Class of 2026

Undeclared
Life histories from mammoth tusks

Ethan Johnson, Class of 2026*

Undeclared
Morphometrics of fossil and living fishes

Grace Pizzini, Class of 2025

Chemical Engineering
Taphonomy of vertebrate microfossil bonebeds

Jake Downey, Class of 2025

Ecology & Evolutionary Biology
Taphonomy of vertebrate microfossil bonebeds

Joseph Rathnaw, Class of 2026*

Biomedical Engineering
Treating pyrite disease in fossils

Kendall Biggs, Class of 2025*

Civil Engineering
Georeferencing fossil locality data

Lian Anderson, Class of 2022

Earth and Environmental Sciences
General digitization and processing of fossils

Lydia Sandefur, Class of 2022

Earth and Environmental Sciences
3D Digitization, collections and archives care

Mason Bright, Class of 2024*

History
Digitizing archives, digital asset management

Megan Riley, Class of 2025

Ecology & Evolutionary Biology
Describing skull of Paleocene mammal

Nathan Irgang, Class of 2024*

Chemical Engineering
Treating pyrite disease in fossils

Nico Alvarez-Lopez, Class of 2023

Earth and Environmental Sciences
Mastodon conservation and fossil replica production

Paloma Calvin, Class of 2023

Earth and Environmental Sciences
General digitization and processing of fossils

Relic Law, Class of 2026*

Mechanical Engineering
Georeferencing fossil locality data

Ben Aulicino, Class of 2026

Undeclared
Life histories from mammoth tusks

Severin Orr, Class of 2024

Classical Archaeology
3D digitization, replica production, collections care

Sofia Belabbes, Class of 2024

Biological Sciences
Describing skull of Paleocene mammal

Sofia Bodrun, Class of 2026*

3D digitization
Digitizing skeleton & swimming mode in Basilosaurus

Sydney Orman, Class of 2023

Geology at Eastern Michigan Univ.
General digitization and processing of fossils

Thea Gilsrud, Class of 2026

History
Museum collections tasks

Vikram Reddy, Class of 2024*

Computer Science
Marine fish diversity in the Cenozoic

Wyatt Cunningham, Class of 2025

Earth and Environmental Sciences
3D digitization, replica production, collections care

*UROP Student

AWARDS & DISTINCTIONS

- **James Andrews** Ermine Cowles Case Lecture Student Award
- **Michael D'Emic (PhD 2011)** senior co-editor, *Journal of Vertebrate Paleontology* (for 2021)
- **Sanaa El-Sayed** American Association of University Women International Doctoral Degree Fellowship
- **Rodrigo Figueroa** Rackham Predoctoral Fellowship
- **Rodrigo Figueroa** Graduate Student Research Award, Society of Systematic Biologists
- **Matt Friedman** NSF award GEO 2219007 "NSFGEO-NERC: Collaborative Research: The first actinopterygian 'adaptive radiation': integrating fossils, function and phylogeny to illuminate innovation in a post-extinction world"
- **Matt Friedman** Robert Lynn Carroll Award, Society of Vertebrate Paleontology
- **Matt Friedman** Charles Schuchert Award, Paleontological Society
- **Anjali Goswami** (BS 1998) Robert Lynn Carroll Award, Society of Vertebrate Paleontology (for 2021)
- **Anjali Goswami** (BS 1998) elected president, Linnean Society of London
- **Lynnea Jackson** Ford Foundation Predoctoral Fellowship
- **Matt Kolmann** started as assistant professor, Department of Biology, University of Louisville
- **Joe Koniecki** (FUMMP member) Strimple Award, Paleontological Society
- **David Krause** (PhD 1982) Romer-Simpson Medal, Society of Vertebrate Paleontology
- **Carlos Peredo** started as assistant professor, Department of Biological Sciences, Miami University
- **Kenneth Rose** (PhD 1979) Honorary Membership, Society of Vertebrate Paleontology
- **Hadeel Saad** National Science Foundation Graduate Research Fellowship
- **Selena Smith** Vital Impact Projects, LSA Meet the Moment Research Initiative:
"Meeting the Mnomen: restoration of wild rice populations for environmental and social justice"
- **Luke Weaver** Romer Prize, Society of Vertebrate Paleontology (for 2021)
- **Luke Weaver** David B. Jones Foundation research grant "Mammalian evolution in dynamic environments across the K-Pg boundary in the Bighorn Basin, Wyoming"
- **Luke Weaver** President's Award for Best Paper in *The American Naturalist*, American Society of Naturalists
- **John Whitlock** (PhD 2010) became chair, Department of Science and Math, Mt. Aloysius College



Joe Koniecki



Hadeel Saad



Luke Weaver

PUBLICATIONS

Álvarez-Armada, N., Cameron, C.B., **Bauer, J.E.**, Rahman, I.A., 2022. Heterochrony and parallel evolution of echinoderm, hemichordate and cephalochordate internal bars. *Proceedings of the Royal Society B* 289 (1974), 20220258.

Anantharaman, S., DeMar Jr., D.G., Sivakumar, R., Dassarma, D.C., Wilson Mantilla, G.P., **Wilson Mantilla, J.A.**, 2022. First rhynchocephalian (Reptilia, Lepidosauria) from the Cretaceous–Paleogene of India. *Journal of Vertebrate Paleontology* 42 (1), e2118059.

Andrews, J.V., Schein, J.P., **Friedman, M.**, 2023. An earliest Paleocene squirrelfish (Teleostei: Beryciformes: Holocentroidea) and its bearing on the timescale of holocentroid evolution. *Journal of Systematic Palaeontology* 21 (1), 2168571.

Argyriou, T., Giles, S., **Friedman, M.**, 2022. A Permian fish reveals widespread distribution of neopterygian-like jaw suspension. *Elife* 11, e58433.

Arney, I., Benefit, B.R., McCrossin, **M.L.**, **MacLatchy, L.**, Kingston, J.D., 2022. Herbivore isotopic dietary ecology of the middle Miocene Maboko Formation, Kenya. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 111061.

Bahadori, A., Holt, W.E., Feng, R., Austermann, J., Loughney, K.M., Salles, T., Moresi, L., Beucher, R., Lu, N., Flesch, L.M., Calvelage, C.M., Rasbury, E.T., Davis, D.M., Potochnik, A.R., Ward, W.B., Hatton, K., SB Haq, S., Smiley, T.M., Wootton, K.M., **Badgley, C.**, 2022. Coupled influence of tectonics, climate, and surface processes on landscape evolution in southwestern North America. *Nature communications* 13 (1), 1-18.

Bauer, J.E., Sheffield, S.L., Waters, J.A., Sumrall, C.D., 2022. Echinoderm model systems, homology, and phylogenetic inference: Comment and reply to Paul (2021). *Acta Palaeontologica Polonica* 67 (2), 465-468.

Brownstein, C.D., Yang, L., **Friedman, M.**, Near, T.J., 2022. Phylogenomics of the Ancient and Species-Depauperate Gars Tracks 150 Million Years of Continental Fragmentation in the Northern Hemisphere. *Systematic Biology*, syac080-syac080.

Cherney, M.D., **Fisher, D.C.**, Auchus, R.J., **Rountrey, A.N.**, Selcer, P., **Shirley, E.A.**, **Beld, S.G.**, Buigues, B., Mol, D., Boeskorov, G.G. and Vartanyan, S.L., 2023. Testosterone histories from tusks reveal woolly mammoth musth episodes. *Nature*, 1-7.

Cohen, K.E., Lucanus, O., Summers, A.P., **Kolmann, M.A.**, 2022. Lip service: histological phenotypes correlate with diet and feeding ecology in herbivorous pacus. *The Anatomical Record*

Collar, D.C., Tremaine, S., Harrington, R.C., Beckett, H.T., **Friedman, M.**, S., 2022. Mosaic adaptive peak shifts underlie body shape diversification in pelagiarian fishes (Acanthomorpha: Percomorpha). *Biological Journal of the Linnean Society* 137 (2), 324-340.

Coronado, K.V., Tedesco, P.A., **Kolmann, M.A.**, Borstein, S.R., Evans, K.O., Correa, S.B., 2022. Feeding habits influence species habitat associations at the landscape scale in a diverse clade of Neotropical fishes. *Journal of Biogeography*.

Cui, X., **Friedman, M.**, Qiao, T., Yu, Y., Zhu, M., 2022. The rapid evolution of lungfish durophagy. *Nature Communications* 13 (1), 1-9.

Community Standards for 3D Data Preservation, eds. J. Moore, **A. Rountrey**, and H. Scates Kettler. Chicago: Association of Research and College Libraries (ALA), 2022.

De Brito, V., Betancur-R, R., Burns, M.D., Buser, T.J., Conway, K.W., Fontenelle, J.P., **Kolmann, M.A.**, McCraney, W.T., Thacker, C.E., Bloom, D.D., 2022. Patterns of phenotypic evolution associated with marine/freshwater transitions in fishes. *Integrative and Comparative Biology*.

Easterling, C.M., **Kolmann, M.A.**, O'Donnell, M.K., 2022. The Lesser-Known Transitions: Organismal Form and Function across Abiotic Gradients. *Integrative and Comparative Biology* 62 (4), 829-839

Etnoyer, P.J., Messing, C.G., Stanley, K.A., **Baumiller, T.K.**, Lavelle, K., Shirley, T.C., 2022. Diversity and time-series analyses of Caribbean deep-sea coral and sponge assemblages on the tropical island slope of Isla de Roatán, Honduras. *Marine Biodiversity* 52 (1), 1-17.

Evans, K.M., Buser, T.J., Larouche, O., **Kolmann, M.A.**, 2022. Untangling the relationship between developmental and evolutionary integration. *Seminars in Cell & Developmental Biology*

Figuerola, R.T., Goodvin, D., **Kolmann, M.A.**, Coates, M.I., Caron, A.M., **Friedman, M.**, **Giles, S.**, 2023. Exceptional fossil preservation and evolution of the ray-finned fish brain. *Nature* 614, 486-491.



PUBLICATIONS CONTINUED...

Friedman, M., 2022. The macroevolutionary history of bony fishes: a paleontological view. *Annual Review of Ecology, Evolution, and Systematics* 53, 353-377.

Friedman, M., 2022. Fossils reveal the deep roots of jawed vertebrates. *Nature* 609 (7929), 897-898.

Ghezelayagh, A., Harrington, R.C., Burress, E.D., Campbell, M.A., Buckner, J.C., Chakrabarty, P., Glass, J.R., McCraney, W.T., Unmack, P.J., Thacker, C.E., Alfraro, M.E., Friedman, S.T., Ludt, W.B., Cowman, P.F., **Friedman, M.**, Price, S.A., Dornburg, A., Faircloth, B.C., Wainwright, P.C., Near, T.J., 2022. Prolonged morphological expansion of spiny-rayed fishes following the end-Cretaceous. *Nature Ecology & Evolution* 6 (8), 1211-1220.

Giles, S., Feilich, K., Warnock, R.C.M., Pierce, S.E., **Friedman, M.**, 2022. A Late Devonian actinopterygian suggests high lineage survivorship across the end-Devonian mass extinction. *Nature Ecology & Evolution*, 1-10.

Gingerich, P.D., 2022. Pattern and rate in the Plio-Pleistocene evolution of modern human brain size. *Scientific Reports* 12 (1), 11216.

Gingerich, P.D., Amane, A., Zouhri, S., 2022. Skull and partial skeleton of a new pachycetine genus (Cetacea, Basilosauridae) from the Aridal Formation, Bartonian middle Eocene, of southwestern Morocco. *Plos one* 17 (10), e0276110.

Ji, K., Wang, C., Hong, H., Yin, K., Zhao, C., Xu, Y., Song, B., Prins, M., Lourens, L.J., **Gingerich, P.D.**, Abels, H.A., 2023. Elevated physical weathering exceeds chemical weathering of clays during the Paleocene-Eocene Thermal Maximum in the continental Bighorn Basin (Wyoming, USA). *Palaeogeography, Palaeoclimatology, Palaeoecology* 615, 111445.

Johnson, K.R., Owens, I.F.P., Global Collection Group (including **Friedman, M.** and **Rountrey, A. N.**), 2023. A global approach for natural history museum collections. *Science* 379, 1192-1194.

Kolmann, M.A., Marques, F.P.L., Weaver, J.C., Dean, M.N., Fontenelle, J.P., Lovejoy, N.R., 2022. Ecological and phenotypic diversification after a continental invasion in neotropical freshwater stingrays. *Integrative and Comparative Biology*

Lundgren, L., Crippen, K.J., **Bauer, J.E.**, Bex, R.T., 2022. Social paleontology on twitter: a case study of topic archetypes, network composition, and structure. *Social Media+ Society* 8 (1), 20563051221080475.

MacLatchy, L.M., Cote, S.M., Deino, A.L., Kityo, R.M., Mugume, A.A., Rossie, J.B., **Sanders, W.J.**, Cosman, M.N., Driese, S.G., Fox, D.L. and Freeman, A.J., 2023. The evolution of hominoid locomotor versatility: Evidence from Moroto, a 21 Ma site in Uganda. *Science* 380, p.eabq2835.

Martin, R.A., Fox, D.L., Urevig, A., Dean, M.R.P, **Rountrey, A.**, Peláez-Campomanes, P., 2022. Fluctuation of body mass in cotton rats and pocket gophers during the late Cenozoic in the Meade basin of Kansas: possible influence of the Huckleberry Ridge Ash-fall. *Historical Biology* 34 (6), 983-994.

Nieto-Miranda, J., Aguilar-Medrano, R., Hernández-Camacho, C.J., **Peredo, C.M.**, Cruz-Escalona, V.H., 2023. Mechanical properties of the California sea lion (*Zalophus californianus*) and northern elephant seal (*Mirounga angustirostris*) lower jaws explain trophic plasticity. *The Anatomical Record*.

Peredo, C.M., Pyenson, N.D., Uhen, M.D., 2022. Lateral palatal foramina do not indicate baleen in fossil whales. *Scientific reports* 12 (1), 1-10.

Perdo, C.M., Ingle, D.N., Marshall, C.D., 2022. Puncture performance tests reveal distinct feeding modes in pinniped teeth. *Journal of Experimental Biology* 225 (11), jeb244296.

Ramos, E.J., Breecker, D.O. Barnes, J.D., Li, F., **Gingerich, P.D.**, Loewy, S.L., Satkoski, A.M., Baczynski, A.A., Wing, S.L., Miller, N.R., Lassiter, J.C., 2022. Swift Weathering Response on Floodplains During the Paleocene-Eocene Thermal Maximum. *Geophysical Research Letters* 49 (6), e2021GL097436.

Ramteke, D., **Smith, S.Y.**, Kapgate, D.K., Stanley, E.L., Manchester, S.R., 2022. Angiosperm affinities of *Surangea* from the late Cretaceous Deccan Intertrappean Beds of central India. *Acta Palaeobotanica* 62 (2), 196-204.

Rincón, A.F., Raad Pájaro, D.A., Jiménez Velandia, H.F., Ezcurra, M.D., **Wilson Mantilla, J.A.**, 2022. A sauropod from the Lower Jurassic La Quinta formation (Dept. Cesar, Colombia) and the initial diversification of eusauropods at low latitudes. *Journal of Vertebrate Paleontology*, e2077112.

Saber, S., **El-Sayed, S.**, El Sayed, A.M., 2023. Influence of Eu³⁺ on the structural, optical and electrical properties of PEO-PVA: dual bandgap materials for optoelectronic applications. *Journal of Materials Science: Materials in Electronics* 34 (5), 406.

PUBLICATIONS CONTINUED...

Salem, B.S., Lamanna, M.C., O'Connor, P.M., El-Qot, G.M., Shaker, F., Thabet, W.A., **El-Sayed, S.**, Sallam, H.M., 2022. First definitive record of Abelisauridae (Theropoda: Ceratosauria) from the Cretaceous Bahariya Formation, Bahariya Oasis, Western Desert of Egypt. *Royal Society Open Science* 9 (6), 220106.

Sarrubghaus, L., Mitani, J.C., **MacLatchy, L.**, 2022. The ontogeny of knuckle-walking and dorsal metacarpal ridge prominence in chimpanzees. *American Journal of Biological Anthropology* 178 (1), 29-43

Saulsbury, J.G. and **Baumiller, T.K.**, 2022. Dispersals from the West Tethys as the source of the Indo-West Pacific diversity hotspot in comatulid crinoids. *Paleobiology*, 1-14.

Sheffield, S.L., Maggie, L.R., **Bauer J.E.**, Hill S.A., Nohejlová M., 2022. A review of blastozoan echinoderm respiratory structures. *Elements of Paleontology*, Cambridge University Press.

Stevenson, A., Corcora, T.C.O., Harley C.D.G., **Baumiller, T.K.**, 2022. Ability to swim (not morphology or environment) explains interspecific differences in crinoid arm regrowth. *Frontiers in Marine Science* 8, Art. Nr. 783759.

Tang, K.K., **Smith, S.Y.**, Atkinson, B.A., 2022. Extending beyond Gondwana: Cretaceous Cunoniaceae from western North America. *New Phytologist* 234 (2), 704-718.

Tang, K.K., **Smith, S.Y.**, Atkinson, B.A., 2023. Winged Fruits of *Friisifructus aligeri* gen. et sp. nov. from the Late Cretaceous of Western North America. *International Journal of Plant Sciences* 184 (4), 000-000.

Taphorn, D.C., Liverpool, E., Lujan, N.K., DoNascimento, C., Hemraj, D.D., Crampton, W.G.R., **Kolmann, M.A.**, Fontenelle, J.P., de Souza, L.S., Werneke, D.C., Ram, M., Bloom, D.D., Sidlauskas, B.L., Holm, E., Lundberg, J.G., Sadaj, M.H., Bernard, C., Armbruster, J.W., López-Fernández, H., 2022. Annotated checklist of the primarily freshwater fishes of Guyana. *Proceedings of the Academy of Natural Sciences of Philadelphia* 168 (1), 1-95.

Wang, Y., Baars, T.F., Sahoo, H., Storms, J.E.A., Martinius, A.W., **Gingerich, P.D.**, Abels, H.A., 2022. Sandstone body character and river planform styles of the lower Eocene Willwood Formation, Bighorn Basin, Wyoming, USA. *Sedimentology*, 1-28

Wang, B., Badgley, C., 2022. Carbon-isotope composition of Artiodactyl tooth enamel and its implications for paleodiets. *Frontiers in Ecology and Evolution*, 941.

Wang, B., Zelditch, M., Badgley, C., 2022. Geometric morphometrics of mandibles for dietary differentiation of Bovidae (Mammalia: Artiodactyla). *Current Zoology* 68 (3), 237-249.

Wilson Mantilla, G.P., Renne, P.R., Samant, B., Mohabey, D.M., Dhobale, A., Tholt, A.J., Tobin, T.S., Widdowson, M., Anantharaman, S., Dassarma, D.C., **Wilson Mantilla, J.A.**, 2022. New mammals from the Naskal intertrappean site and the age of India's earliest eutherians. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 110857.

Zaher, H., Mohabey, D.M., Graziotin, F.G., **Wilson Mantilla, J.A.**, 2023. The skull of *Sanajeh indicus*, a Cretaceous snake with an upper temporal bar, and the origin of ophidian wide-gaped feeding. *Zoological Journal of the Linnean Society* 197, 656-697.

Zouhri, S., Zalmout, I.S., **Gingerich, P.D.**, 2022. New protosirenid (Mammalia, Sirenia) in the late Eocene sea cow assemblage of southwestern Morocco. *Journal of African Earth Sciences* 189, 104516.

