

2021 GRATITUDE REPORT

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**BUILD  
ING**

COMM  
UNITY



[WWW.DMNS.ORG](http://WWW.DMNS.ORG)



# MISSION

**Be a catalyst!** Ignite our community's passion for nature and science.

# VISION

The Denver Museum of Nature & Science envisions an empowered community that loves, understands, and protects our natural world.



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# LETTER FROM THE PRESIDENT & THE BOARD CHAIR

## Reflecting on 2021 brings to mind two words:

adaptability and community. The unprecedented COVID-19 pandemic made it difficult to plan for the future as public health guidelines and other circumstances changed quickly.

However, there is no question that our community also experienced many moments of beauty during this difficult time. We saw incredible courage and persistence. We saw countless examples of the kindness of others. And we saw the power of connection through friends and supporters of the Museum like you.

This year, thanks to your generosity, the Museum continued to connect with hundreds of thousands of people across Colorado as a source of fun, education and perhaps most importantly, respite.

We transformed the Curiosity Cruiser from an interactive, multi-sensory experience into a community outreach vehicle that delighted community members with fun and science-based activities.

Our communities continued to engage with us online while also returning to Mars Outpost and Dinosaur Gulch, our play areas at Colorado Mills and the Cherry Creek Shopping Center.

We met a larger share of our guests in places other than the Museum when compared to previous years, serving 356,678 guests offsite and 442,366 people virtually.

We were humbled by the continued support of our more than 44,000 member households, which afforded us opportunities to remain adaptable in the face of uncertainty.

And perhaps most importantly, we launched our equity strategic initiative, which focuses on examining our systems and processes to ensure the Museum is a fair and welcoming place to work and visit. Our goal is to remain transparent and accountable in enacting change around our diversity, equity, inclusion and accessibility work.

Looking to the future, we're excited to take the lessons of some of the most challenging times in our history forward – the ability to quickly change course and navigate the unexpected – to forge new and deeper connections with the communities we serve so that everyone sees us as their museum.



*George Sparks*

**George Sparks**  
President & CEO



*Kristin Richardson*

**Kristin Richardson**  
Chair of the Board, 2021



# 2021 YEAR IN REVIEW

“

*Being able to visit these places makes me feel connected to my community-  
so necessary in this time of isolation  
and uncertainty!*

- Anonymous

”

**1,757,871** People Served



**958,830**  
ONSITE



**356,678**  
OFFSITE



**442,366**  
VIRTUALLY

**248,743**



CHILDREN, YOUTH &  
TEACHERS  
SERVED IN  
SCHOOL GROUPS

**\$120,000**

in donor-funded scholarships provided,  
serving **20,520** school children

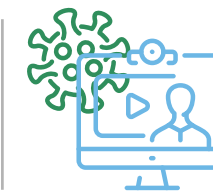
**364,895** people welcomed  
into five temporary exhibitions

**909**

Virtual Programs hosted with **58** partners



**2,500** New  
YouTube Subscribers  
who watched **36,900** hours of  
programming (**3,745%** increase)



**30** Institute for  
Science & Policy COVID-19  
webinars hosted



**44,727**  
Member households served



**821**  
Active volunteers  
contributed 27,125 hours



**83**  
Outgoing collections loans  
(5,066 objects)



**47**  
Scientific books, journal articles  
and book chapters published



**37**  
Research field excursions



**24**  
Interns and 20 Teen Science  
Scholars mentored



**15**  
Popular books and  
articles published



**4**  
New species named



**1**  
"Tiny" Torosaurus model  
installed in the Museum

# THE TREASURER'S REPORT



The Denver Museum of Nature & Science is pleased to have ended 2021 on solid footing as it continues to recover from the COVID-19 pandemic. The Museum achieved operating revenues of \$50,821,000, which includes one-time governmental assistance in the form of recognition of our Paycheck Protection Program (PPP) funds (though the funds were received in and supported 2020 operations). Also included was the accrual of pending Employee Retention Credit (ERC) funds, which will support one-time investments once received. Significant recovery was seen in attendance, membership and retail revenues. Overall operating revenues for the Museum were up by 22% from 2020, not including the impacts of the two government assistance programs.

We owe special recognition to the citizens of the seven-county metro region, the City and County of Denver and the SCFD for their ongoing operational support. SCFD revenue for the Denver metropolitan area remained strong throughout the pandemic and increased by 18% in 2021 from the previous year. The District's renewal was approved by voters in 2016.

Operationally, the Museum had expenditures of \$37,777,000, which is still 14% below pre-pandemic levels. Staffing levels and needs for supplies and services continue to grow to meet increased attendance levels and the Museum has kept up with compensation pressures driven by the tight labor market.

The Museum continued with some capital projects in 2021. In the Everyone, Everywhere Strategic Plan, concepting work on the new Future First guest experience was completed, as was design development work for Nearby Nature.

On the following page, we present our financial results with the strategic activities separated from operations. Museum-wide, the year ended with a stated operating surplus of \$13,044,000, though when you remove the impacts of the two government assistance programs, it was approximately \$1.9 million.

The Museum received a clean audit opinion from our independent accounting firm.

Edward D. Scholz  
Vice President, Finance and Business Operations

Steven Halstedt  
Chair, Finance and Audit Committee

# YEAR END FINANCIAL REPORT

(Year ending Dec. 31, 2021, in thousands) \*Excludes DMNS Foundation operating results

SUPPORT & REVENUE	2021 Operations	2021 Initiatives	2021 All Museum
Admissions	9,785	-	9,785
SCFD	11,150	-	11,150
Gifts and grants	9,758	3,931	13,689
Memberships	4,449	-	4,449
Gift shop and food service (net)	3,803	-	3,803
City & County of Denver Program	1,920	1,077	2,997
Other	340	-	340
Other	9,616	-	9,616
<b>Total Support &amp; Revenue</b>	<b>50,821</b>	<b>5,008</b>	<b>55,829</b>
<b>EXPENDITURES</b>			
<b>Program Activities</b>			
Exhibits/Visitor Experiences	8,468	1,369	9,837
Physical Plant	7,153	1,354	8,507
Admissions	2,347	-	2,347
Collections & Research	4,823	554	5,377
Education	3,375	303	3,678
<b>Total Program Activities</b>	<b>26,166</b>	<b>3,580</b>	<b>29,746</b>
<b>SUPPORTING ACTIVITIES</b>			
General & Administration	6,516	7,927	14,445
Marketing	2,772	-	2,772
Fundraising	1,381	201	1,582
Membership	942	-	942
<b>Total Supporting Activities</b>	<b>11,611</b>	<b>8,128</b>	<b>19,741</b>
<b>Total Expenditures</b>	<b>37,777</b>	<b>11,708</b>	<b>49,487</b>
Changes in net assets from operations	13,044	(6,700)	6,342

# THE GREATEST GIFT

On December 14, 2021, an anonymous donor gifted the Museum with its largest donation ever—\$25 million earmarked for collections and cultural knowledge conservation. Building on the Museum's decades-long foundation of object conservation, this gift will take the science division in exciting new directions while also honoring the donor's passion.

Initially, the Museum will focus on preserving the collections and exhibitions that contain catalogued objects and specimens, along with digital asset management.

In the coming months and years, many priorities and soon-to-be imagined projects will be determined. Our work will be guided by conservation in collaboration with the communities of origin.

The team is already researching best practices and recruiting an advisory panel with expertise in conservation science, Indigenous cultural heritage and museums to guide the plan.

In addition, this \$25 million gift positions the Museum to play a leading role in the worldwide effort to engage source communities in decisions about how to care for objects in Western museums. It builds on more than 15 years of work by the department of anthropology to engage in collaborative work with Indigenous groups in the American Southwest, Kenya, Peru and elsewhere. December 14 will remain an important anniversary in the Museum's history for decades to come.

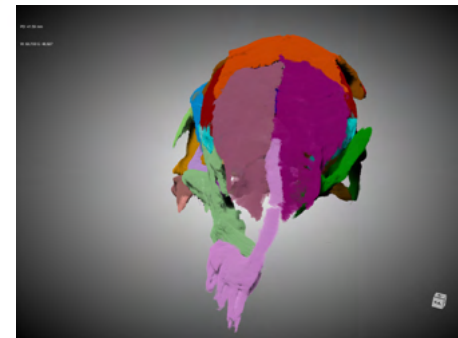


# MUSEUM WINS SEVERAL GOVERNMENT GRANTS

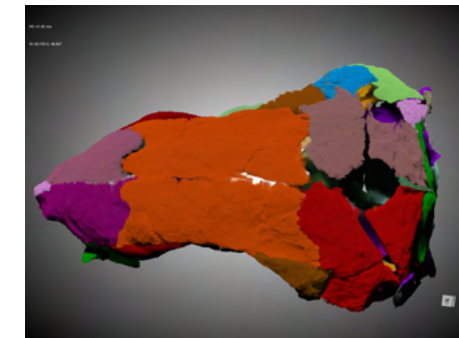


The Denver Museum of Nature & Science was awarded eight federal and local government grants in 2021, totaling nearly \$1.2 million. These grants support our ability to further scientific research, train a new generation of scientists, care for our collections, enhance understanding of our audiences, and ignite our community's passion for nature and science. In 2021, federal grants also helped the Museum retain critical staff that could have been lost due to COVID-19 related budget reductions. Federal grants, which are awarded through a competitive peer review process, can also inspire support from non-federal sources. These grants are one measure of your Museum's vibrant research (such the National Science Foundation-supported study on the origin of the turtle body shown on page 15), programs and relevance for supporters and community members like you.

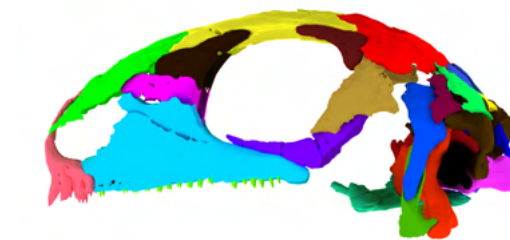
Thank you to the National Endowment for the Humanities, the Institute of Museum and Library Services, NASA, the National Science Foundation, the Bureau of Land Management, and local agencies Jefferson County Open Space and Larimer County for their investments in the Museum's scientific activities.



**Anterior view**  
The front of the skull



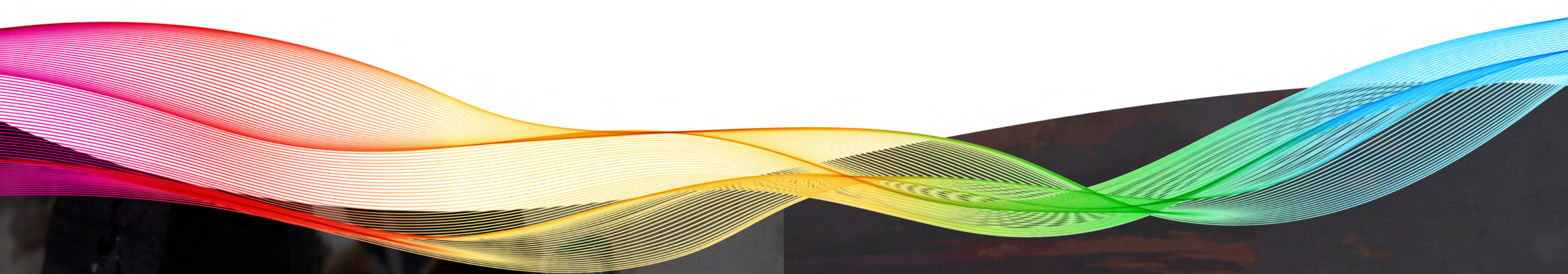
**Dorsal view**  
The top of the skull



**L Lateral original and reconstruction**  
Side view of the original specimen with the reconstructed model







“

*I very much look forward to resuming my cultural life. Aside from moments of grace, charity, and unconditional love; “The Arts” is what we as humans do best.*

- Anonymous

”

“

*Dear Kelly,*

*We had a great tour of the museum today. Thank you for arranging all this for us. It is a pity that we didn't get to meet Mr. Sparks and you though. Please pass our greetings and gratitude to Mr. Sparks.*

*Please also pass our gratitude to Stephanie Woods, Lauren Whycott, Charlotte, John, and Memri as we don't have their email address. Everyone we met at the museum today was so warm-hearted and we learned a lot from them. We sincerely appreciate their hospitality.*

- Julia Chew

”

# INSTITUTE FOR SCIENCE & POLICY MAKES SCIENCE SECOND NATURE

“Such a complex, important story about energy and our future. High quality production and great characters.”  
- Wild By Nature, 11/16/2021

The Institute for Science & Policy continued its work to foster civil, productive dialogue around complex challenges. In 2021, the Institute hosted 30 free public webinars on topics that included COVID-19, misinformation, gene editing, food security and wildfires. Each program brought researchers, public officials and community members together in conversation to build trust, find common ground and discuss collaborative solutions on contentious issues.

The Institute also released “Coal at Sunset,” its first-ever long-form narrative podcast. The eight-part audio series explored the ongoing energy transition through the voices of Craig, Colorado, where a coal-fired power plant and coal mines are scheduled to close. The acclaimed series, which featured more than 20 interviews with residents and policymakers, put a strong focus on a community bracing for change. “Coal at Sunset” was recently named one of the top local podcasts of the year by the Denver Post.

“We wanted to focus on the human side of energy policy and bring empathy and nuance to an issue that will ultimately affect every Coloradan in some way,” said Institute Director Kristan Uhlenbrock.

The Institute is preparing a second podcast for 2022 and will continue its virtual programming, beginning with a multi-part series on grassland conservation in April. Find details at [institute.dmns.org](https://institute.dmns.org).



# NEW SCIENTIFIC DISCOVERIES

Science is more and more a collaborative endeavor. Naming new species in honor of supporters is one way to recognize the collaboration and donations that help make discoveries possible. The science division staff were involved in several exciting discoveries, including:

- ***Parasaurolophus cyrtocristatus***: Found by Smithsonian Ecology Fellow Erin Spear in the Bisti/De-Na-Zin Wilderness of New Mexico as part of a museum team led by Curator of Dinosaurs Joe Sertich. *Parasaurolophus cyrtocristatus* is the first new skull discovered in nearly a century from a rare species of the iconic, tube-crested dinosaur.
- ***Plastomenus joycei***: A new species of fossil soft-shelled turtle named after Walter Joyce, a preeminent paleontologist who studies fossil turtles. It was found by Curator of Vertebrate Paleontology Tyler Lyson in Corral Bluffs outside of Colorado Springs, Colorado.
- ***Palatobaena knellerorum***: Found by Museum Volunteer Sharon Milito in Corral Bluffs, *Palatobaena knellerorum* was a bottom dwelling turtle that lived in freshwater ponds and rivers, had a very unusual skull that was broadly rounded and eyes situated on top of its head. It was named after Stephen and Mary Lynne Kneller in recognition of all of their support for the Museum's Cretaceous/Paleogene research. The holotype specimen (the specimen the species description is based on) is on display in the "After the Asteroid" exhibition on the first floor of the Museum.
- ***Pulchritudo attenboroughi*** (Attendborough's Beauty): Rediscovered by Curator of Entomology Frank Krell in the Museum's "Prehistoric Journey" exhibition, *Pulchritudo attenboroughi*, or Attendborough's Beauty, is a new frog-legged beetle species from the Green River Formation in Garfield County, Colorado. Named for the beautiful patterns on its wing casings and in honor of English naturalist and broadcaster Sir David Attenborough for the way he inspired so many through his documentaries about the wonders of the natural world.



# VIRTUAL PROGRAMS HERE TO STAY

In 2021, the Museum's virtual programs evolved. The year included a rebrand from DMNS@Home to DMNS OnDemand, launched on March 14, 2020 in response to the COVID-19 pandemic. There was exponential audience growth and the addition of a TikTok channel. (If you've ever wondered whether a star exploding will be fatal to life on Earth, follow us on TikTok to hear Astrophysicist Chris explain.)

**SINCE THE LAUNCH OF  
DMNS@HOME, THE MUSEUM'S  
VIRTUAL PROGRAMS  
HAVE LED TO:**

**1.9 MILLION VIEWS**  
ACROSS ALL SOCIAL MEDIA CHANNELS

**MORE THAN 300,000 VIEWS**  
ON YOUTUBE ALONE (A 425% INCREASE!)

**NEARLY 37,000 HOURS**  
OF VIDEOS WATCHED

**2,500 SUBSCRIBERS**

**\$320,000**  
IN GIFTS AND GRANTS

**\$66,551**  
IN PROGRAM REVENUE

**NEARLY \$16,000**  
IN ROUND-UP DONATIONS

**58 PARTNERSHIPS**

**1 NEW TIKTOK CHANNEL**

Continued engagement with the Museum's virtual programming, even as people move back to in-person school, work, and entertainment, is proof that the virtual experience is now a part of life.

# 2021 BOARD OF TRUSTEES



Kristin Richardson  
Chair



Stephen G. McConahey  
Vice Chair



Richard Ambrose



Lisa Levin Appel



Matthew Burkett



Jenny Hopkins



Christine Marquez-  
Hudson



Alice Jackson



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Dave Liniger



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Susan McIntire



Timothy M. Ryan



John E. Freyer



Henry Gordon



Steve Halsted



Jena Hausmann



Happy Haynes



Jesus Salazar



Mark Sexton



Mark Spiecker



Leo Tilman



# 2021 BOARD OF TRUSTEES

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Vice Chair - Stephen G. McConahey  
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Lisa Levin Appel  
Matthew Burkett  
Christopher Chavez  
Monty Cleworth  
John Couzens  
James H. Crocker  
Peter Dea  
John E. Freyer  
Henry Gordon  
Steve Halstedt  
Jena Hausmann  
Happy Haynes  
Jenny Hopkins

Alice Jackson  
John Levisay  
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Susan McIntire  
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Timothy M. Ryan  
Jesus Salazar  
Mark Sexton  
Mark Spiecker  
Leo Tilman

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Patricia Barela Rivera  
Pamela D. Beardsley  
Brown W. Cannon  
Anthony M. Combs  
Jeffrey H. Coors  
Joan C. Donner  
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John A. Ferguson III  
Peter Grant\*  
Oliver W. Hickel, III  
Wayne Hutchens  
Gail Heitler Klapper  
Walter "Buz" A. Koelbel, Jr.

Nancy Leprino Henry  
Harry T. Lewis\*  
Mary Pat Link  
Donna Lynne  
Carrie Morgridge  
William Sinclair II  
Eric Sipf  
Thomas Swanson  
Sondra Talley  
M. Ray Thomasson  
Mike Wilfley

\*Passed away in 2021

# EDWIN CARTER LEGACY SOCIETY

Thank you to these individuals for remembering the Museum in their estate plans.

Anonymous  
Marcelle Arak & Hal Landen  
Hartman Axley  
Mr. Paul Barrett  
Mrs. Barbara B. Becker & Mr. Benjamin Cordova  
Robert Blauvelt & Michael Corrigan  
Mr. and Mrs. Wilbur Blundell  
Mr. Roger P. Botterbusch  
Donald & Nikkie Brandborg  
Marcus Brooks & Donna L. Stuedeman  
Serena & Darek Bruzgo  
Ms. Monica K. Burkhardt  
Anne Canter  
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Ms. Kit Cassingham & Mr. Randy Cassingham  
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Montgomery C. Cleworth  
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Garrett Crawford  
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Bonnie & Bob Downing  
Marilyn Ellis  
Mr. James A. & Mrs. June E. Englehorn  
Cathy Fields-Sauceda  
Megan Fisher  
Gerald Forney & Irene Ludwig  
Robert & Valerie Forsberg  
Mike Foster  
Val Gheller  
Mr. James Goddard  
Peter & Rhondda Grant  
Kristine Haglund  
Jared & Veronika Hall  
Oriole N. Hart  
Larry D. and Vivian Harvey  
Johni Hays  
Luanne Hazelrigg  
Bob & Joanie Herndon  
W. Jean Horkans  
Wayne & Joyce Hutchens  
Pat Jerrell  
Richard Johnson  
Dan & Dianne Kile  
Bob Kinter  
Dr. Tony Kisley  
Joseph LaCamera  
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Harry T. Lewis Jr.  
Suzann & John Love  
John Maginness & Connie Lintz  
Ed & Patricia Martin  
Gene and Rosann McCullough  
Margaret McKechnie

John & Suzy McKeever  
Kathleen McLin  
Mr. James C. McLin & Mrs. Kathleen Carter-McLin  
Paula Meadows  
Marilynn P. Miciek  
Lael Moe & Cathy Fennelly  
William A. Richey and Mary E. Moser  
Susie and Perry Moss  
Sharron Myers  
Dr. Stephen E. Nash and Carmen Carrasco  
Jeff & Michelle Neely  
Carmen & Carl Neu  
John Neuschaefter & Kandy Tigerman  
Denny and René O'Connell  
Ann O'Donnell & Canton O'Donnell  
Angeles Ortega  
Marlene J. Pakish  
Mr. Carl G. Patterson, III  
Mr. & Mrs. Perry Peine  
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Pat Russell and Betty Russell  
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Edward Scholz & Craig Brown  
Aimee Shapiro  
Phyllis Sharp  
L. Shideler  
Mr. & Mrs. Donald H. Smith, Jr.  
Charles R. Spratt  
Gayle L. Stallings  
Dr. Michael Stone  
Dr. Richard and Barbara Stucky  
Ted & Dianne Stump

Dick & Sonnie Talley  
Jeff Terrill  
Janice\* & Glenn Tucker  
Mark & DonnaDale Turner  
Donald F. & Linda S. Wagner  
Robert K. Walker & Cristy Godwin  
Susan K. Wallner  
Mr. Richard Whipkey  
Kimberly Wiescamp  
Dr. Vickie M. Wilson  
Joan E. Wood  
Ms. Pat Yingst  
Robert Zupkus & Janet Burda

# ENDOWMENTS

Thank you for supporting these endowment funds that will sustain the Museum for years to come.

Ann O'Donnell Endowment for Outreach Education  
A. E. Reynolds Endowment Fund  
Avenir Conservation Fund  
Avenir Endowment for Conservation  
Bouslog Fund  
C. Neil & Carolyn S. Norgren Endowment Fund  
Calvin A. & Virginia J. Powers Family Fund  
Collections Fund  
Coors Exhibit Fund  
Dodge Wallace Endowment Fund  
Dodge Wallace Fellowship Fund  
Education Endowment Fund  
DMNS Foundation  
Frank H. Ricketson Jr. Capital Fund  
Gates Family Foundation Capital Fund  
Gates Family Foundation Hall of Life Fund  
Geraldine Pawley Foundation Endowment  
Irving & Carol Shwayder Endowment for  
Science & Technology  
O'Shaughnessy Family Endowment Fund  
Paul and Harriet Rosen Teen Science Scholars  
Endowment Fund  
Phipps Anthropology Collections Fund  
Phipps Collections Fund  
Phipps Family Fund  
Prehistoric Journey Fund  
Robert P. & Mary S. Hackstaff Fund  
Schlessman Fund for Asian Ethnology  
Stucky Postdoctoral Fellowship Fund  
The Charles C. Gates and June S. Gates  
Creativity Endowment

The Melvin & Elaine Wolf Foundation Scholarship Fund  
Tim & Kathryn Ryan Earth Sciences Fund  
Vida F. Ellison Fund  
Volunteer Endowment Fund  
Wilfley Fund  
William Randolph Hearst Endowed Fund for  
Education & Outreach Programs

# COLLECTIONS

Thank you for enhancing the Museum's research collections with your donations.

## **ANTHROPOLOGY**

Harriet Rosen; Denver Museum of Nature & Science  
Glenn O. Sanger, Millie Sanger  
Thomas Van Zandt

## **ARCHIVES**

Joseph Gyure  
Lorni Sharrow

## **EARTH SCIENCES**

Travis Apodaca, Waste Management  
John Foster  
James W. Hagadorn  
Jackie Hilaire  
Christopher S. Jenkins, NorWood Development Group  
David Lumb  
Thomas Nolan  
Byron Shelton, Savory Institute  
Linda Soar  
Mr. Walter Stein  
Karissa Webster

## **ZOOLOGY**

Stacey Litchfield  
Pat Miller  
Kirk W. Navo  
Keith Stephenson  
Gail Stratton & Pat Miller, University of Mississippi  
Paul Thomas





“

*Thank you for your dedication to giving this information to the community to helping the community be more informed.*

- Anonymous

”

# INDIVIDUALS

## \$100,000-\$999,999

Anonymous  
Montgomery C. Cleworth  
John & Ginny Freyer  
Estate of W. Peter Grand  
John Hankla  
Mary Lynne & Stephen Kneller  
Hal & Ann Logan  
Edward Warner & Jacalyn Erikson

## \$10,000-\$99,999

Anonymous  
Richard & Kathryn Ambrose  
Sue Anschutz-Rogers  
Max & Elaine Appel  
Lisa Levin Appel  
Lawrence & Carol Davila  
Brown W. & Mardi Cannon  
Dorothy Dines  
John Estes & Norma Horner  
Keith & Kathie Finger  
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Mrs. Charles Hazelrigg  
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Alice K. & Mike Jackson

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Michael & Elizabeth Lacey  
Harry T. Lewis Jr.  
Mr. & Mrs. Kenneth D. Luff  
Jay & Miggy Monroe  
The Ponzio Family  
Joseph & Alice Proietti  
Harriet S. Rosen  
Kathryn & Tim Ryan  
Dr. M. Ray Thomasson & Merrill Shields  
Erik & Kathy Simpson  
Dick & Sonnie Talley  
Janice R. Tucker\*  
Mr. David J. & Sally J. Warren

## \$5,000-\$9,999

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Mr. & Mrs. Robert M. Danos  
Cannon Y. Harvey & Lyndia K. Harvey  
Richard & Barb Holme  
Frederick & Jillian Hubbell  
J. Wayne & Joyce Hutchens  
Jon & Roxanne Isenhardt  
John & Cheryl Muhr  
Toby Pippin & Marty Tingelhoff  
Dennis T. & Katie L. Simpson

## \$1,500-\$4,999

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Savita Ginde & Reid Collier  
James & Diana Hanna  
Helen Young Hayes  
Happy Haynes  
Lisa & Kelly Holub  
Suzy Hopkins  
Bruce L. & Heidi H. Hoyt  
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 Gregory Parmley  
 Judith Purvis  
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# 2021 SCIENTIFIC PUBLICATIONS

Denver Museum of Nature & Science staff published **38** peer-reviewed journal articles, edited volumes, books, and book chapters

Ahrens, D., Ahyong, S.T., Ballerio, A., Barclay, M.V.L., Eberle, J., Espeland, E., Huber, B.A., Mengual, X., Pacheco, T.L., Peters, R.S., Rulik, B., Vaz-de-Mello, F., Wesener, T. & **Krell, F.-T.** Is it time to describe new species without diagnoses?—A comment on Sharkey *et al. Zootaxa* 5027(2): 151–159. <https://doi.org/10.11646/zootaxa.5027.2.1>

Blais, B.R., Smith, B.E., Placyk Jr., J.S., Casper, G.S. & **Spellman, G.M.** Phylogeography of the smooth greensnake, *Opheodrys vernalis* (Squamata: Colubridae): divergent lineages and variable demographics in a widely distributed yet enigmatic species. *Biological Journal of the Linnean Society* 134(4): 940–957. <https://doi.org/10.1093/biolinnean/blab124>

Carpenter, A.M., Graham, B.A., **Spellman, G.M.**, Klicka, J. & Burg, T.M. Genetic, bioacoustics and morphological analyses reveal cryptic speciation in the warbling vireo complex (*Vireo gilvus*: Vireonidae: Passeriformes). *Zoological Journal of the Linnean Society*, zlab036 (20 pp.). <https://doi.org/10.1093/zoolinnean/zlab036>

Fabbri, M., Navalón, G., Mongiardino Koch, N., Hanson, M., **Petermann, H.** & Bhullar, B.A. A shift in ontogenetic timing produced the unique sauropod skull. *Evolution* 75: 819–831. <https://doi.org/10.1111/evo.14190>

Gates, T.A., Evans, D.C. & **Sertich, J.J.W.** Description and rediagnosis of the crested hadrosaurid (Ornithomimidae) dinosaur *Parasaurolophus cyrtocristatus* on the basis of new cranial remains. *PeerJ* 9: e10669 (35 pp.). <https://doi.org/10.7717/peerj.10669>

Gent, V.A., Longman, M.W., Bottjer, R.J. & **Hagadorn, J.W.** Stratigraphic distribution of the Codell Sandstone in the Denver Basin using wireline logs and core. *The Mountain Geologist* 58(3): 305–330. <https://doi.org/10.31582/rmag.mg.58.3.305>

◊ indicates articles that have not been peer-reviewed.

Graham, M.R., **Garcia, E.L.**, Hendrixson, B.E. & **Cushing, P.E.** Pliocene origins, Pleistocene refugia, and postglacial range expansions in southern devil scorpions (Vaejovidae: *Vaejovis carolinianus*). *Organisms Diversity & Evolution* 21: 575–590. <https://doi.org/10.1007/s13127-021-00505-z>

**Hagadorn, J.W.**, Longman, M.W., Bottjer, R.J., Gent, V.A., Holm-Denoma, C.S. & Sumrall, J.B. The type section of the Codell Sandstone. *The Mountain Geologist* 58(3): 211–248. <https://doi.org/10.31582/rmag.mg.58.3.211>

Hinojosa, L., Riedy, R., Polman, J., Swanson, R., **Nuessle, T.** & Garneau, N. Expanding public participation in science practices beyond data collection. *Citizen Science: Theory and Practice* 6(1): 11 (15 pp.). <http://doi.org/10.5334/cstp.292>

Hodgin, E.B., Nelson, L.L., Wall, C.J., Barron-Diaz, A.J., Webb, L.C., Schmitz, M.D., Fike, D.A., **Hagadorn, J.W.** & Smith, E.F. A link between rift-related volcanism and end-Ediacaran extinction? Integrated chemostratigraphy, biostratigraphy, and U-Pb geochronology from Sonora, Mexico. *Geology* 49: 115–119. <https://doi.org/10.1130/G47972.1>

**Jones, R.R.** & **Cushing, P.E.** An assessment of function, intraspecific variation, and taxonomic reliability of eremobatid ctenidia (Arachnida: Solifugae). *Zoologischer Anzeiger* 295: 43–54. <https://doi.org/10.1016/j.jcz.2021.09.002>

Joyce, W.G., Anquetin, J., Cadena, E.-A., Claude, J., Danilov, I.G., Evers, S.W., Ferreira, G.S., Gentry, A.D., Georgalis, G.L., **Lyson, T.R.**, Pérez-García, A., Rabi, M., Sterli, J., Vitek, N.S. & Parham, J.F. A nomenclature for fossil and living turtles using phylogenetically defined clade names. *Swiss Journal of Palaeontology* 140: 5 (45 pp.). <https://doi.org/10.1186/s13358-020-00211-x>

Joyce, W.G., Rollot, Y., Evers, S.W., **Lyson, T.R.**, Rahantarisoa, L.J. & **Krause, D.W.** A new pelomedusoid turtle, *Sahonachelys mailakavava*, from the Late Cretaceous of Madagascar provides evidence for convergent evolution of specialized suction feeding among pleurodire. *Royal Society Open Science* 8: 210098 (32 pp.). <http://doi.org/10.1098/rsos.210098>

**Koons, M.** & Arbutuckle MacLeod, C. (eds.) *The Egyptian Mummies and Coffins of the Denver Museum of Nature & Science*. Louisville, Colorado: University Press of Colorado. 218 pp.

**Koons, M.L.**, Mitchell, M.D., **Hernandez-Bravo, M.**, **Hitte, T.**, **Moss Logan, J.** & **Baxter, E.** The Magic Mountain community archaeology project. *Journal of Community Archaeology & Heritage* 8(4): 213–228. <https://doi.org/10.1080/20518196.2021.1972560>

**Krause, D.W.**, Hoffmann, S., **Lyson T.R.**, **Dougan, L.G.**, **Petermann, H.**, Tezca, A., Chester, S.G. B. & Miller, I.M. New skull material of *Taeniolabis taoensis* (Multituberculata, Taeniolabididae) from the early Paleocene (Danian) of the Denver Basin, Colorado. *Journal of Mammalian Evolution* 28: 1083–1143. <https://doi.org/10.1007/s10914-021-09584-3>

**Krell, F.-T.** Suppressing works of contemporary authors using the Code's publication requirements is neither easy nor advisable. *Bulletin of Zoological Nomenclature* 78: 61–67. <https://doi.org/10.21805/bzn.v78.a021>

**Krell, F.-T.** Taxonomy and distribution of *Orubesa* in the Arabian Peninsula and surrounding areas (Coleoptera: Scarabaeoidea). *Zoology in the Middle East* 67(4): 332–343. <https://doi.org/10.1080/09397140.2021.1957209>

**Krell, F.-T.** & Vitali, F. Attenborough's Beauty: exceptional pattern preservation in a frog-legged leaf beetle from the Eocene Green River Formation, Colorado (Coleoptera: Chrysomelidae: Sagrinae). *Papers in Palaeontology* 7(4): 2101–2112. <https://doi.org/10.1002/spp2.1398>

Longman, M.W., **Hagadorn, J.W.** & Gent, V.A. Sedimentology, petrography and deposition of the Upper Cretaceous Codell Sandstone in the Denver Basin. *The Mountain Geologist* 58: 249–304. <https://doi.org/10.31582/rmag.mag.58.3.249>

**Lyson, T.R., Petermann, H. & Miller, I.M.** A new plastomenid trionychid turtle, *Plastomenus joycei*, sp. nov. from the earliest Paleocene (Danian) Denver Formation of south-central Colorado, U.S.A. *Journal of Vertebrate Paleontology* 41(1): e1913600 (11 pp.). <https://doi.org/10.1080/02724634.2021.1913600>

**Lyson, T.R., Petermann, H., Toth, N., Bastien, S. & Miller, I.M.** A new baenid turtle, *Palatobaena knellerorum*, sp. nov. from the lower Paleocene (Danian) Denver Formation of south-central Colorado, U.S.A. *Journal of Vertebrate Paleontology* 41(2): e1925558 (11 pp.). <https://doi.org/10.1080/02724634.2021.1925558>

**Maccracken, S.A., Sohn, J.-C., Miller, I.M. & Labandeira, C.C.** A new Late Cretaceous leaf mine *Leucopterops spirala* gen. et sp. nov. (Lepidoptera: Lyonetiidae) represents the first confirmed fossil evidence of the Cemiostominae. *Journal of Systematic Palaeontology* 19(2): 131–144. <https://doi.org/10.1080/14772019.2021.1881177>

Manthey, J.D., Klicka, J. & **Spellman, G.M.** The genomic signature of allopatric speciation in a songbird is shaped by genome architecture (Aves: *Certhia americana*). *Genome Biology and Evolution* 13(8): evab120 (21 pp.). <https://doi.org/10.1093/gbe/evab120>

**Nash, S.E., Towner, R.H. & Dean J.S.** The curious Douglas-fir (*Pseudotsuga menziesii*) trees in Schulman Grove, Mesa Verde National Park, southwestern Colorado, U.S.A. *American Antiquity* 86(3): 549–568. <https://doi.org/10.1017/aaq.2021.4>

Oser, S.E., Chin, K., **Sertich, J.J.W.**, Varricchio, D.J., Choi, S. & Rifkin, J. Tiny, ornamented eggs and eggshell from the Upper Cretaceous of Utah represent a new ootaxon with theropod affinities. *Scientific Reports* 11: 10021 (15 pp.). <https://doi.org/10.1038/s41598-021-89472-1>

Over, D.J., Wistort, Z., Soar, L.K., Bullecks, C.J. & **Hagadorn, J.W.** Conodonts and the Devonian-Carboniferous transition in the Dyer Formation, Colorado. *Rocky Mountain Geology* 56(2): 51–67. <https://doi.org/10.24872/rmgjournal.56.2.51>

Robison, H.W., Tumilson, C.R., **Cushing, P.E.** & Dorris, P.R. An updated checklist of the spiders (Arachnida: Araneae) of Arkansas. *Journal of the Arkansas Academy of Science* 75: Article 5 (pp. 6–19). <https://doi.org/10.54119/jaas.2021.7516>

Salad Hersi, O., Landing, E., Franzi, D. & **Hagadorn, J.** Cambrian–Lower Ordovician of SW Quebec–NE New York. Pp. 1–32 in Cousens, B.L. & Riggs, N. (eds.): *GSA in the Field in 2020; Geological Society of America Field Guide* 60. [https://doi.org/10.1130/2021.0060\(01\)](https://doi.org/10.1130/2021.0060(01))

Santibáñez-López, C.E., **Cushing, P.E.**, Powell, A.M. & Graham, M.R. Diversification and post-glacial range expansion of giant North American camel spiders in genus *Eremocosta* (Solifugae: Eremobatidae). *Scientific Reports* 11: 22093 (11 pp.). <https://doi.org/10.1038/s41598-021-01555-1>

Santibáñez-López, C.E., Farleigh, K., **Cushing, P.E.** & Graham, M.R. Restriction enzyme optimization for RADseq with camel spiders (Arachnida: Solifugae). *Journal of Arachnology* 48(3): 346–350. <https://doi.org/10.1636/JoA-S-20-040>

Sarver, B.A.J., Herrera, N.D., Sneddon, D., Hunter, S.S., Settles, M.L., Kronenberg, Z., **Demboski, J.R.**, Good, J.M. & Sullivan, J. Diversification, introgression, and rampant cytonuclear discordance in Rocky Mountains chipmunks (Sciuridae: *Tamias*). *Systematic Biology* 70(5): 908–921. <https://doi.org/10.1093/sysbio/syaa085>

Salem, B.S., O'Connor, P.M., Gorscak, E., El-Sayed, S., **Sertich, J.J.W.**, Seiffert, E. & Sallam, H.M. Dinosaur remains from the Upper Cretaceous (Campanian) of the Western Desert, Egypt. *Cretaceous Research* 123: 104783 (10 pp.). <https://doi.org/10.1016/j.cretres.2021.104783>

Schultze, H.-P., Bullecks, J., Soar, L.K. & **Hagadorn, J.W.** Devonian fish from Colorado's Dyer Formation and the appearance of Carboniferous faunas in the Famennian. Pp. 247–256 in Pradel, A., Denton, J. S. S. & Janvier, P. (eds.): *Ancient Fishes and Their Living Relatives: a Tribute to John G Maisey*. Munich, Germany: Verlag Dr. Friedrich Pfeil.

Sinha, S., Brinkman, D.B., Murray, A.M. & **Krause, D.W.** Late Paleocene fishes of the Ravenscrag Formation, Roche Percée area, southeastern Saskatchewan, Canada. *Journal of Vertebrate Paleontology* 41(3): e1957907 (18 pp.). <https://doi.org/10.1080/02724634.2021.1957907>

Titus, A.L., Knoll, K., **Sertich, J.J.W.**, Yamamura, D., Suarez, C.A., Glasspool, I.J., Ginouves, J.E., Lukacic, A.K. & Roberts, E.M. Geology and taphonomy of a unique tyrannosaurid bonebed from the upper Campanian Kaiparowits Formation of southern Utah: implications for tyrannosaurid gregariousness. *PeerJ* 9: e11013 (50 pp.). <https://doi.org/10.7717/peerj.11013>

Woodruff, D.C., Goodwin, M.B., **Lyson, T.R.** & Evans, D.C. Ontogeny and variation of the pachycephalosaurine dinosaur *Sphaerolitholus buchholtzae*, and its systematics within the genus. *Zoological Journal of the Linnean Society* 193(2): 563–601. <https://doi.org/10.1093/zoolinnean/zlaa179>

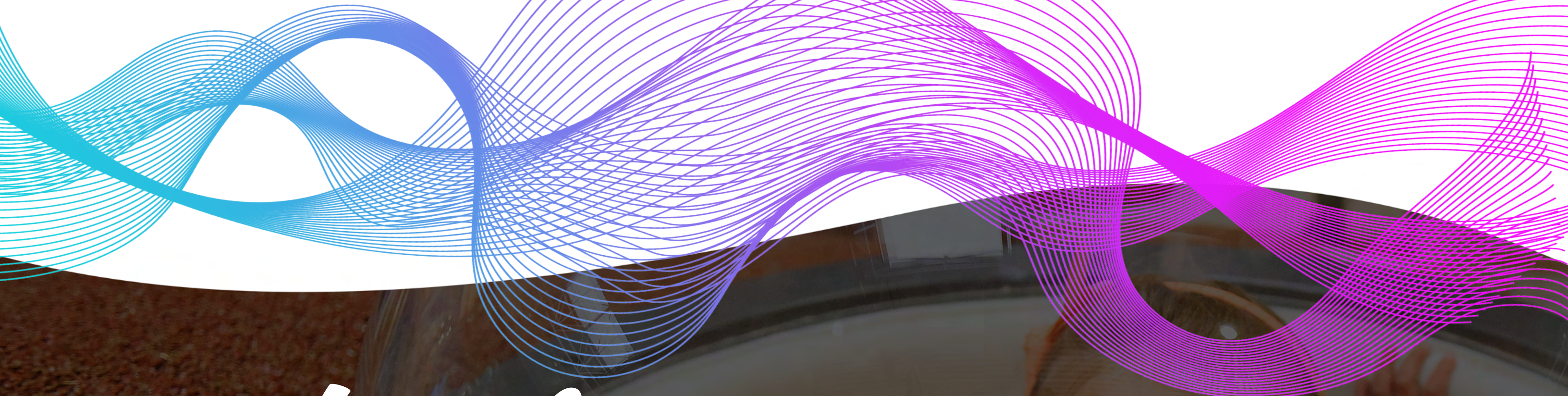
Ziani, S., Bezděk, A., **Krell, F.-T.** & Sommer, D. Authorship and date of publication of the name *Scarabaeus stercorosus* (currently *Anoplotrupes stercorosus*) (Coleoptera: Scarabaeoidea: Geotrupidae). *Zootaxa* 5067(4): 593–599. <https://doi.org/10.11646/zootaxa.5067.4.7>



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