

Morgan L. Turner, PhD

Curriculum Vitae

Harvard Medical School
Harvard University
Boston, MA 02115

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www.morganlturner.com

Expertise: biomedical research program leadership with multi-site collaboration, vertebrate and human anatomy, biological data visualization for 2D and immersive extended reality displays, data portal development, locomotor evolution, surgical methods, animation and interactive visualization for reconstruction and analysis of *in-vivo* skeletal kinematics

Education

Brown University

- Dec 2020 **Ph.D., Ecology and Evolutionary Biology, Division of Biology and Medicine**
Thesis: Internal and external foot kinematics at the animal-substrate interface
Committee: Stephen M. Gatesy, Elizabeth L. Brainerd, Thomas J. Roberts, David H. Laidlaw
- May 2018 **Sc.M., Ecology and Evolutionary Biology, Division of Biology and Medicine**
Including training and teaching appointments affiliated with the Warren Alpert Medical School of Brown University and the Rhode Island School of Design

University of Washington

- June 2013 **B.A., Biological Anthropology**
Minor: Paleobiology | Advisor: Christian A. Sidor

Appointments

Harvard Medical School

BIOMEDICAL INFORMATICS | HUMANS IN DATA INTEGRATION, VISUALIZATION, & EXPLORATION LAB

- 2025 - **Director of Scientific Operations**
Currently directs and optimizes operational infrastructure to enable high-impact scientific research and innovation. Ensures research teams are equipped with effective processes, compliance frameworks, strategic planning, and resources to achieve scientific and organizational goals.
- 2022 - 2025 **R&D Manager and Visualization Scientist**
Led development and design teams in building, maintaining, and enhancing scientific software products in close collaboration with researchers and the principal investigator.

University of Minnesota

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING | INTERACTIVE VISUALIZATION LAB

- 2022 - 2022 **Associate Director**
Led student training; led three initiatives within the department Inclusiveness, Diversity, Equity, and Advocacy Committee.
- 2021 - 2022 **Computing Innovation Fellow and Postdoctoral Associate**
Competitive funding awarded from the Computing Research Association, Computing Community Consortium, and National Science Foundation to support postdoctoral research on interactive visualizations for biomechanics research on living and extinct skeletal motion data.

University of Washington

DEPARTMENT OF BIOLOGY | BURKE MUSEUM OF NATURAL HISTORY AND CULTURE

- 2013 - 2016 **Scientific Illustrator** for publication and museum exhibition

2013 - 2014 **Peer TA** for Comparative Anatomy and Mammal Evolution courses

National Park Service

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

2014 **Artist in Residence** for publication and museum exhibition

Awards, Grants, and Fellowships

2024 **'HUBY' award for HuBMAP Data Portal leadership**, National Institutes of Health

2022 **Inclusivity & Diversity Scholarship**, IEEE Visualization Conference

2021 **Alfred Sherwood Romer Prize Finalist**, Society of Vertebrate Paleontology
outstanding scientific contribution in Vertebrate Paleontology by a predoctoral student

2021 **Leadership Development Grant**, Office of Postdoctoral Initiatives, Univ. of Minn.

2020 **Computing Innovation Fellow**, Computing Research Association, Computing Community Consortium, and National Science Foundation
a two-year postdoctoral fellowship and career-enhancing bridge experience for computing PhD graduates to combat hiring disruptions due to COVID-19

2020 **Grant in Aid for Research**, "The impact of interdigital substrate flow on theropod dinosaur footprint diversity", Society of Integrative and Comparative Biology

2019 **Doctoral Dissertation Enhancement Grant**, "Postural Grades and Foot Function Gradients in Archosaurs", Dept. of Ecology and Evolutionary Biology, Brown University

2018 **Best Poster Award**, "Developing Virtual Reality Visualizations of Dinosaur Track Creation with Scientific Sketching", IEEE VIS

2016 **Graduate Research Fellowship Honorable Mention**, National Science Foundation

2015 **Life Sciences Fellowship**, University of Missouri (Declined)

Peer-Reviewed Journal Publications

2025 HuBMAP Data Portal: A Resource for Multi-Modal Spatial and Single-Cell Data of Healthy Human Tissues. [Turner ML](#), Smits TC, Liaw TS, Honick B, Shirey B, Choy L, Akhmetov N, An S, Betancur D, Bordelon D, Burke K, Cao-Berg I, Conroy J, Csonka C, Cuda P, Donahue S, Fisher S, Furst D, Hanna E, Hardi J, Kakar T, Keller MS, Li X, Ma Y, McWilliams A, Money A, Morgan R, Moerth E, Muerto J, Musen MA, Nic E, O'Connor MJ, Phillips G, Ropelewski A, Sablosky R, Saripalli S, Sibilla M, Simmel D, Simmons A, Tang X, Welling J, Yuan Z, Hemberg M, Ruffalo M, Silverstein J, Blood P, and Gehlenborg N. Preprint: <https://arxiv.org/abs/2511.05708>

2024 A Mixed Reality and 2D Display Hybrid Approach for Visual Analysis of 3D Tissue Maps. Mörtz E, Nielsen C, [Turner ML](#), Xianhao L, Keller MS, Beyer J, Pfister H, Zhu-Tian C, and Gehlenborg N. Preprint: https://osf.io/preprints/osf/zka2j_v1

2023 Advances and Perspectives for the Human BioMolecular Atlas Program (HuBMAP). Jain S, Pei L, Spraggins JM, Angelo M, Carson JP, Gehlenborg N, ... [HuBMAP Consortium](#). *Nature Cell Biology*. DOI: 10.1038/s41556-023-01194-w Link to: [paper](#)

2022 Inner workings of the alligator ankle reveal the mechanistic origins of archosaur locomotor diversity. [Turner ML](#) and Gatesy SM. *Journal of Anatomy*. DOI: 10.1111/joa.13801 Link to: [paper](#) [video](#)

- 2022 What is stance phase on deformable substrates? [Turner ML](#), Falkingham PL, and Gatesy SM. *The Journal of Integrative and Comparative Biology*. DOI: 10.1093/icb/icac009 Link to: [paper](#)
- 2022 A proposed standard for quantifying 3-D hindlimb joint poses in living and extinct archosaurs. Gatesy SM, Manafzadeh AR, Bishop PJ, [Turner ML](#), Kambic RE, Cuff AR, and Hutchinson JR. *Journal of Anatomy*. DOI: 10.1111/joa.13635 Link to: [paper](#)
- 2021 Virtual and Augmented Reality: new tools for visualizing, analyzing, and communicating complex morphology. Cieri RL, [Turner ML](#), Carney RM, Falkingham PL, Kirk AM, Wang T, Jensen B, Novotny J, Tveite J, Gatesy SM, Laidlaw DH, Kaplan H, Moorman AFM, Howell M, Engel B, Cruz C, Smith A, Gerichs W, Lian Y, Schultz JT, and Farmer C. *Journal of Morphology*. DOI: 10.1002/jmor.21421 Link to: [paper](#)
- 2021 Alligators employ intermetatarsal reconfiguration to modulate plantigrade ground contact. [Turner ML](#) and Gatesy SM. *The Journal of Experimental Biology*. DOI: 10.1242/jeb.242240 Link to: [paper](#) [video](#)
- 2020 Constructing and testing hypotheses of dinosaur foot motions from fossil tracks using digitization and simulation. Falkingham PL, [Turner ML](#), and Gatesy SM. *Palaeontology*. DOI: 10.1111/pala.12502 Link to: [paper](#)
- 2020 It's in the loop: shared subsurface foot kinematics in birds and other dinosaurs shed light on a new dimension of fossil track diversity. [Turner ML](#), Falkingham PL, and Gatesy SM. *Biology Letters*. DOI: 10.1098/rsbl.2020.0309 Link to: [paper](#) [video](#)
- 2020 Contrast-enhanced XROMM reveals in vivo soft tissue interactions in the hip of Alligator mississippiensis. Tsai HP, [Turner ML](#), Manafzadeh AR, and Gatesy SM. *Journal of Anatomy*. DOI: 10.1111/joa.13101 Link to: [paper](#)
- 2019 Developing Virtual Reality Visualizations for Unsteady Flow Analysis of Dinosaur Track Formation using Scientific Sketching. Novotny J, Tveite J, [Turner ML](#), Gatesy SM, Drury F, Falkingham P, and Laidlaw DH. *IEEE Transactions on Visualization and Computer Graphics*. DOI: 10.1109/TVCG.2019.2898796 Link to: [paper](#) [video](#)
- 2018 Footfall Pattern of a Bottom-Walking Crocodile (*Crocodylus acutus*). Farlow JO, Robinson NJ, [Turner ML](#), Black J, and Gatesy SM. *Palaio*. DOI: 10.2110/palo.2018.037 Link to: [paper](#) [video](#)
- 2017 Pathology in a Permian Parareptile: Congenital Malformation of Sacral Vertebrae. [Turner ML](#) and Sidor CA. *Journal of Zoology*. DOI: 10.1111/jzo.12519 Link to: [paper](#)
- 2015 The vertebrate fauna of the Upper Permian of Niger—IX. The appendicular skeleton of *Bunostegos akokanensis* (Parareptilia: Pareiasauria). [Turner ML](#), Tsuji LA, Ide O, and Sidor CA. *Journal of Vertebrate Paleontology*. DOI: 10.1080/02724634.2014.994746 Link to: [paper](#)

For links to publications and media, see <https://morganlturner.com/publications/>

Presentations

Invited Talks

- Mar 2022 Ecology and Evolutionary Biology Behavior Group, University of Minnesota, MN.
Inferring extinct archosaur locomotor variability and diversity using modern-day alligators and birds.
- Feb 2022 Minnesota Robotics Institute, MN.
Can insight from the feet of alligators, birds, and dinosaurs serve the robotics field?
- June 2021 Endotherm Research Group, Bell Museum of Natural History, MN.
Internal and external foot kinematics at the animal-substrate interface.

- July 2020 Beneski Museum of Natural History and Culture, MA.
Research Trajectory: How I came to study fossil dinosaur tracks.
- Nov 2019 PaleoLunch, Burke Museum of Natural History and Culture, WA.
The dynamic interaction between foot and ground.
- Oct 2019 CCV-Con, Center for Computation and Visualization, Brown University, RI.
Developing Virtual Reality Visualizations for Exploring Dinosaur Track Formation.
- Feb 2019 Ecology and Evolutionary Ecology Brown Bag Seminar, Brown University, RI.
Tanzania field trip report.
- Sept 2018 Ecology and Evolutionary Ecology Brown Bag Seminar, Brown University, RI.
Where does footprint morphology come from? Integrating 3D methods for exploring dinosaur track formation.
- Jan 2018 Initiative to Maximize Student Development, Brown University, RI.
Predatory Journals and Plagiarism.
- April 2017 Scientific Visualization Group, Department of Computer Science, Brown University, RI.
Dinosaur Feet Underground: visualizing, Aligning, and Comparing Toe Path Trajectories.
- Feb 2016 Ecology and Evolutionary Ecology Brown Bag Seminar, Brown University, RI.
Pareiasaurs and Paleoart.

Invited Symposia

- May 2022 How Did Dinosaurs Walk? Turner ML. Networking and Information Technology Research and Development (NITRD; nitrd.gov) 30th Anniversary Symposium. *International Spy Museum, Washington, D.C.*
- Jan 2022 Walking, swimming, and everything in between: Guineafowl limb kinematics on firm, soft, and semi-liquid substrates. Falkingham PL, Turner ML, Gatesy SM. Evolutionary conservation and diversity in a key vertebrate behavior: “walking” as a model system. *Society for Integrative and Comparative Biology, virtual.*
- July 2019 Where does footprint morphology come from? Developing virtual reality visualizations for exploring dinosaur track formation. Turner ML, Novotny J, Falkingham PL, Laidlaw DH, Gatesy SM. VirtMorph - Using Virtual Reality to Visualize and Analyze Vertebrate Morphology. *International Congress of Vertebrate Morphology, Prague, Czech Republic.*
- Oct 2018 Where does footprint morphology come from? Integrating 3D methods for exploring dinosaur track formation. Turner ML, Falkingham PL, Gatesy SM. Building a Phenomic Universe: Collection, Management, and Applications of Digital Morphological Data. *Society of Vertebrate Paleontology, Albuquerque, NM.*
- May 2017 Sub-Surface Foot Trajectories and Fossil Dinosaur Tracks. Turner ML, Falkingham PL, Gatesy SM. Last Days of Pangea Triassic-Jurassic Research Symposium. *Bruce Museum, CT.*

Panel Participation

- April 2022 Work-life balance and time management. University of Massachusetts Amherst, MA.
- June 2021 Careers in Biomechanics. International Women in Biomechanics
- July 2019 Summit for Women in STEM. Wheaton College, MA

Workshop Participation

- Jan 2021 - Dec 2021 Bi-weekly skill-building workshop series for the Interactive Visualization Lab.
- Aug 2021 Motion and Animation: Unity for the Interactive Visualization Lab Workshop series.
- July 2019 Virtual Morphology (VirtMorph) symposium, at the International Congress of Vertebrate Morphology conference, Prague, Czechia.

Contributed Conference Presentations

† undergraduate mentee ♦ refereed submission

- 2025 Ask and Reveal: Natural Language-Driven Analysis of Multiplexed Immunofluorescence Imaging. Mörtz E, Darji A, [Turner ML](#), Kouril D, Gehlenborg N. *Intelligent Systems for Molecular Biology / European Conference on Computational Biology*. †
- 2025 Quadrate motion drives the biomechanics of macrophagy in reticulated pythons *Malayopython reticulatus*: insights from XROMM. Ryerson WG, Kaczmarek EB, Cieri RL, [Turner ML](#), Lomax JJ, Brainerd EL, Capano JG. *The Society for Integrative and Comparative Biology*.
- 2024 Vitessce Link: A Hybrid Approach Combining Mixed Reality and 2D Displays for Visualization of 3D Tissue Maps. Mörtz E, Nielsen C, [Turner ML](#), Xianhao L, Keller MS, Beyer J, Pfister H, Zhu-Tian C, Gehlenborg N. *European Society for Spatial Biology*.
- 2024 The HuBMAP Data Portal: A Comprehensive Resource for Healthy Human Tissue Data at Single-Cell Resolution. Liaw L, [Turner ML](#), Choy L, Conroy J, Akhmetov N, Money A, Kakar T, Smits TC, Keller M, and Gehlenborg N. *The American Society for Cell Biology*.
- 2024 LLM-Supported Exploration of 3D Microscopy Imaging. Darji A, Mörtz E, [Turner ML](#), Kouril D, Luber J and Gehlenborg N. *IEEE VIS*. † ♦
- 2023 Visualization of multimodal and spatially-resolved single-cell data. Keller MS, Gold I, McCallum C, Manz T, Morth E, Akhmetov N, ElSadek MY, Choy L, [Turner ML](#), Biederstedt E, Kharchenko PV, Gehlenborg N. *Harvard Medical School DBMI Science Day*.
- 2023 XROMM analysis of the distal forelimb of Alligator mississippiensis during the high walk. Baier D, [Turner ML](#), Trammel E, Singharaj I, Rudich S, Carney RM. *Society of Integrative and Comparative Biology Annual Meeting*.
- 2022 Linked Spatial and Temporal Normalization for Analysis of Cyclical 4D Skeletal Motion Data. [Turner ML](#), Herman B, Broske M, and Keefe DF. *IEEE VIS*. ♦
- 2021 Inside the “Black Box” of the Crurotarsal Ankle and Insights into the Pedal Origins of Locomotor Diversity in Archosaurs. [Turner ML](#). *Society of Vertebrate Paleontology Annual Meeting [virtual]*. **Alfred Sherwood Romer Prize Finalist**. ♦
- 2021 An exploratory visualization tool for linking 2D and 3D biomechanical motion data. †Deibert C, [Turner ML](#), and Keefe DF. *REU Virtual Poster Symposium [virtual]*.
- 2021 Intermetatarsal mobility in the American alligator. [Turner ML](#), and Gatesy SM. *Society of Integrative and Comparative Biology Annual Meeting [virtual]*.
- 2021 Reticulated pythons roll their hemimandibles and splay their quadrates to engulf enormous prey. Capano JG, Kaczmarek EB, Lomax JJ, [Turner ML](#), Brainerd EL, and Ryerson WG. *Society of Integrative and Comparative Biology Annual Meeting [virtual]*.
- 2020 Intermetatarsal mobility and grades of foot contact in the American alligator: building a new perspective on archosaurian foot evolution. [Turner ML](#) and Gatesy SM. *Society of Vertebrate Paleontology Annual Meeting [virtual]*.
- 2020 Dinosaurs in disguise: substrate flow accounts for unusual Early Jurassic tracks. Gatesy SM and [Turner ML](#). *Society of Vertebrate Paleontology Annual Meeting [virtual]*.
- 2020 Looking inside the sole: intermetatarsal mobility in the American alligator. [Turner ML](#) and Gatesy SM. *Society of Integrative and Comparative Biology Annual Meeting*.
- 2019 Cranial Kinesis During Prey Ingestion in the Reticulated Python. Capano JG, Brainerd EL, [Turner ML](#), Ryerson WG. *Northeastern Regional Meeting of the Society of Integrative and Comparative Biology Division of Vertebrate Morphology and Comparative Biomechanics*.

- 2019 Generating and Testing Hypotheses of Dinosaur Foot Motions Using 3D-Digitized Tracks and Large-Scale Granular Simulations. Falkingham PL, Turner ML, Gatesy SM. *International Congress of Vertebrate Morphology*.
- 2018 Developing a Virtual Reality Application for Unsteady Flow Analysis in Dinosaur Track Creation. Novotny J, Tveite JJ, Turner ML, Gatesy SM, Falkingham PL, Laidlaw, DH. *IEEE VIS. Best Poster Award.* ♦
- 2018 Contrast-enhanced XROMM reveals in vivo soft tissue interaction in the hip of Alligator mississippiensis: implications for pseudosuchia. Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM. *Society of Vertebrate Paleontology Annual Meeting*.
- 2018 Footfall Pattern of a Bottom-Walking Crocodile (*Crocodylus acutus*). Farlow JO, Robinson NJ, Turner ML, Black J, Gatesy SM. *Society of Vertebrate Paleontology Annual Meeting*.
- 2018 Intra-foot kinematics of the American alligator. Turner ML, Gatesy SM. *Northeastern Regional Meeting of the Society of Integrative and Comparative Biology Division of Vertebrate Morphology and Comparative Biomechanics*.
- 2018 Avian subsurface foot kinematics on deformable substrates. Turner ML, Falkingham PL, Gatesy SM. *Society for Integrative and Comparative Biology Annual Meeting*.
- 2018 CT Imaging of Dinosaur Footprints: Hidden Topography and the Origin of Track Diversity. Gatesy SM, Turner ML, Falkingham, PL. *Society for Integrative and Comparative Biology Annual Meeting*.
- 2018 In- and Ex-Vivo Analysis of the Kinematics and Function of the Tendon of Sutton in Alligator mississippiensis. Napoli JG, Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM. *Society for Integrative and Comparative Biology Annual Meeting*.
- 2018 Significance of hip kinematics for interpreting articular soft tissue function in Alligator mississippiensis. Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM. *Society for Integrative and Comparative Biology Annual Meeting*.
- 2017 Sub-Surface Foot-Trajectories and Fossil Dinosaur Tracks. Turner ML, Falkingham PL, Gatesy SM. *Last Days of Pangea Triassic-Jurassic Research Symposium*.
- 2017 Significance of hip kinematics for interpreting articular soft tissue function in Alligator mississippiensis: evolutionary and biomechanical implications for Saurischia. Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM. *Last Days of Pangea Triassic-Jurassic Research Symposium*.
- 2016 The morphology of motion in sub-surface foot trajectories and fossil dinosaur tracks. Turner ML, Falkingham PL, Gatesy SM. *Northeastern Regional Meeting of the Society of Integrative and Comparative Biology Division of Vertebrate Morphology and Comparative Biomechanics*.
- 2016 Hip joint kinematics of Alligator mississippiensis: Significance of articular soft tissues for interpreting hind limb function. Tsai HP, Turner ML, Manafzadeh AR, Gatesy SM. *Northeastern Regional Meeting of the Society of Integrative and Comparative Biology Division of Vertebrate Morphology and Comparative Biomechanics*.
- 2016 The morphology of motion in sub-surface foot trajectories and fossil dinosaur tracks. Turner ML, Falkingham PL, Gatesy SM. *Society of Vertebrate Paleontology Annual Meeting*.
- 2016 The morphology of motion: sub-surface foot trajectories and fossil tracks. Turner ML, Falkingham PL, Gatesy SM. *Society of Vertebrate Paleontology Annual Meeting*.
- 2015 Removing assumptions of anatomical orientation from cladistic characters: an example from pareiasaurs. Turner ML, Sidor CA, Tsuji LA. *Society of Vertebrate Paleontology Annual Meeting*.

- 2014 Evidence for the earliest evolution of a fully parasagittal quadruped. Turner ML, Tsuji LA, Sidor CA. *Society of Vertebrate Paleontology Annual Meeting*.
- 2013 The Ontogeny of the Scapulocoracoid of the Pareiasaur *Bunostegos akokanensis* (Amniota: Parareptilia) from the Permian of Niger. Turner ML, Tsuji LA, Sidor CA. *Undergraduate Research Symposium, University of Washington*.

Teaching

Teaching Development, Training, and Certificates

- 2022 Equity and Diversity Certificate, University of Minnesota.
- 2022 Postdoctoral Leadership Development Certificate, University of Minnesota.
- 2020 Course Design Certificate, Sheridan Center for Teaching and Learning, Brown University.
- 2017 Reflective Teaching Certificate, Sheridan Center for Teaching and Learning, Brown University.

University of Minnesota

Visualization (CSCI5609)

- S22 Guest Lecturer and Domain Science Contributor. Provided scientific visualization problem and data for student final projects, focusing on techniques to address domain user needs in exploring multidimensional time-varying alligator foot skeletal animations. Engaged in student project critiques at sketch and implementation phases.

Warren Alpert Medical School of Brown University

Human Anatomy I + II (BIOL3644 + BIOL3655)

- F18, S19 Special Projects TA. Organized and led teaching staff meetings; documented course progress and evaluation; developed post-dissection formative assessments which integrated course objectives, lecture material, and key lab concepts.
- F17, S18 TA. Lectured on lower limb anatomy and function as well as on the abdomen, co-led review sessions on extremities and the abdomen, taught via extensive hands-on cadaver dissections and integration with imaging, prepared prosections, prepared and graded evaluations.
- F16, S17 TA. Taught via extensive hands-on cadaver dissections and integration with imaging, prepared prosections, prepared and graded evaluations.

Brown University + Rhode Island School of Design

Virtual Reality Design for Science (CSCI1370 / ILLUS3340)

- F15, F17 Guest Lecturer and Domain Science Contributor. Provided scientific visualization problem and data for student projects, lectured on scientific visualization needs in domain area of foot kinematics and dinosaur footprint formation, created and led a 2-week long assignment, attended and engaged in student project critiques at sketch, mock-up, and implementation phases. Collaborations formed in this course resulted in two peer-reviewed publications (numbers 4 and 9 in Publications).

University of Washington

Evolution of Mammals and their Ancestors (BIOL 443)

- S14 Peer TA. Assisted in preparation, teaching, and evaluation of labs focused on anatomy and evolutionary relationships of skeletal and fossil specimens.

Comparative Anatomy of Vertebrates (BIOL 453)

- F13 Peer TA. Assisted in preparation, teaching, and evaluation of labs focused on hands-on cadaver dissection of lamprey, dogfish sharks, and cats.

Mentoring

- summer 2024 Aarti Darji. University of Texas at Arlington (HuBMAP Summer Internship Program at Harvard University). Project: LLM Supported Exploration and Analysis of 2D & 3D Multiplexed Imaging Data.
- summer 2023 Mohamed "Yousry" ElSadec. Minerva University (SIBMI Program at Harvard University). Project: Visualization of 3D Organs and Tissue Blocks in Virtual Reality.
- summer 2023 Sydney Meyer. Wheaton College (HuBMAP Internship Program at Harvard University) Project: Analysis of HuBMAP Data using Workspaces on the HuBMAP Data Portal.
- fall 2022 Julia Pan. University of Minnesota. Project: interactive presentations in a planetarium setting.
- fall 2021 Kevin Bradt. University of Minnesota. Project: linked 2D-3D biomechanics visualizations.
- summer 2021 Rea Yoh. Brown University. Project: Bat wing interossei illustrations.
- summer 2021 Cheyenne Deibert. Vanderbilt University. (NSF REU Site at University of Minnesota) Project: linked 2D-3D biomechanics visualizations.
- 2018 - 2019 Eli Mitnik. Brown University. Project: track indenter experiments and analysis in R.

Service

Organized Conference Panels and Workshops

- Oct 2024 Co-Chair with Barbora Kozlikova, Simon Warchol, Eric Moerth, Laura Garrison, and Nils Gehlenborg, "Bio+Med+Vis Challenge," IEEE VIS. (St. Pete Beach, Florida, USA). Challenge website: http://biovis.net/2024/biovisChallenges_vis/
- March 2024 Co-Organizer with Nils Gehlenborg, "Reflections on building spatial biology data portals and resources." Visualization and User Experience Seminars (VUES) on Spatial Biology.
- Oct 2023 Co-Organizer with Eric Moerth and Nils Gehlenborg, "Visualization for spatial single-cell atlases: Identifying challenges and opportunities in complex biomedical data at multiple scales and modalities," IEEE VIS. (Melbourne, Australia)
- Oct 2021 Chair, "Navigating Interdisciplinary Careers in Visualization", IEEE VIS (virtual)

Reviewing

ACM Conference on Human Factors in Computing Systems (CHI).

Anatomical Record.

Bulletin of the Peabody Museum of Natural History.

Frontiers in Zoology.

IEEE Visualization Conference (VIS).

Integrative and Organismal Biology.

Journal of Anatomy.

Vertebrate Anatomy Morphology Palaeontology.

Zoological Journal of the Linnean Society.

Departmental and Institutional Service

- 2022 - 2022 Diversity Community of Practice Liaison, Postdoctoral Association, University of Minnesota.
- 2022 - 2022 College of Science and Engineering Delegate, Postdoctoral Association, University of Minnesota.
- 2021 - 2022 Inclusiveness, Diversity, Equity, and Advocacy Committee (CS-IDEA) Member, Department of Computer Science and Engineering, University of Minnesota.
- 2018 - 2020 Vice President, Ecology and Evolutionary Biology Grad Student Association, Brown University.

- 2017 Graduate Student Council Representative, Brown University.
 2009 - 2012 Volunteer Fossil Preparator, Burke Museum of Natural History and Culture, WA.

Public Engagement

Demos, Museum Exhibit Development, and Hands-on Interaction

- Jan 2023 Video contribution of dinosaur footprint formation research for permanent exhibit display at the American Museum of Natural History, NY.
- summer/fall 2022 Interactive planetarium exhibit design at the Bell Museum, MN.
- Nov 2021 *Fossil Bites* public talk and interactive stereoscopic z-Space demonstration. Talk: "*X-rays, Animation, and Fossil Feet: Looking at how dinosaurs and crocodylians walked from the ground up.*" Science Museum of Minnesota, MN.
- Dec 2020 The Great Greenfield DinoFest Jurassic Roadshow [virtual]. Pocumtuck Valley Memorial Association and Memorial Hall Museum, Deerfield, MA.
- 2019 - 2020 Custom museum exhibit and website on fossil dinosaur track formation created for permanent display at the Beneski Museum of Natural History at Amherst College, MA.
www.amherst.edu/museums/naturalhistory/dinosaur-tracks
- May 2017 Discover: A Conversation Between Art and Science. Rhode Island School of Design and Brown University collaboration show, RI.
- Feb, 2014 Behind the Scenes Night. Burke Museum of Natural History and Culture, WA.
- Feb, 2014 Dinosaurs and Cavemen Science Expo. Department of Pathology and Anatomical Sciences and the Department of Anthropology, University of Missouri, MO.
- 2012 - 2015 Dino Day. Burke Museum of Natural History and Culture, WA.

Elementary and High School Programs

- 2019 - 2020 Brown Junior Researcher Program at the Francis J Varieur Elementary, Pawtucket, RI.
- 2019 Judge, Rhode Island Science and Engineering Fair, Warwick, RI.
- 2018 Virtual Reality demonstrations, Brown University, RI.
- 2018 Scientist Guest Interview, Wild Ones, Providence, RI.
- 2017 - 2018 Brown Junior Researcher Program at the Boys and Girls Club, East Providence, RI.

Other Professional Activities

Additional Training and Certificates

- 2021 Python Data Wrangling Boot Camp, Colombia University.
- 2016 X-ray Reconstruction of Moving Morphology (XROMM) short course, Brown University.
- 2013 Natural Science Illustration Certificate, University of Washington.
- 2009, 2012 Forensic Art for Fine Artists; Drawing from Observation, Gage Academy of Art.