

## Curriculum Vitae

Ashley Caroline Morhardt, B.S., M.S., Ph. D.

### Personal Information

Pronouns: She/Her

Date of Birth: September 17, 1983

Place of Birth: Barrington, IL, USA

Citizenship: US Citizen

Current Hometown: Belleville, IL, USA

Race & Ethnicity: White, Non-Hispanic

Marital Status: Married to Daniel G. Morhardt, B.A., History Education, Illinois College

Children: Jonas J. Morhardt (age 3)

### Present Position

Assistant Professor of Anatomy, Department of Neuroscience,  
Washington University School of Medicine (WUSM) in St. Louis (July 2017-present)

### Contact

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Faculty Profile: <https://neuroscience.wustl.edu/people/ashley-morhardt-phd/>

### Website and Social Media Management

Lab Website: <https://www.paleoneurology.com/>

- *includes my lab's location, purpose, values, collaborations, achievements, and outreach efforts*

Instagram: @IoDinoLab

Blog: Penchant4Paleo.blogspot.com

### Education

- Bachelor of Science – Illinois College (2002–2006), Biology Major, English Minor
- Master of Science – Western Illinois University (2007–2009), Biological Sciences
- Doctor of Philosophy – Ohio University (2010–2016), Ecology and Evolutionary Biology
- Postdoctoral Research Associate – WUSM (2016-2017), Department of Neuroscience

### Former Academic Positions and Employment

- Postdoctoral Anatomy Researcher, Department of Neuroscience, WUSM (2016–2017)
- Anatomy Instructor, Ohio University Heritage College of Osteopathic Medicine (OU-HCOM; 2015–2016)
- Ohio Center for Ecology and Evolutionary Studies (OCEES) Graduate Research Fellow (Fall 2014)
- Teaching Assistant, Human Gross Anatomy & Neuroanatomy, OU-HCOM (2010–2015)
- Undergraduate Instructor of Record (Genetics, Mammalogy) & Laboratory Coordinator, Department Biological Sciences, Western Illinois University (WIU; 2009–2010)

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- Paleontology Fieldwork, Burpee Museum of Natural History (Summers, 2008–2010)
- Teaching Assistant, Human A&P Labs + Comparative Anatomy, Department of Biological Sciences, WIU (2007–2009)
- Elementary Special Education Paraprofessional, 3<sup>rd</sup> grade, IL District #47 (2006-2007)
- Instructor, McHenry County College, Kids and College, Comparative Anatomy (Summer 2006)
- Intern at Illinois State Museum Collections and Research in Springfield, Illinois (Spring 2006)
- Teaching Assistant, Human A&P, Department of Biology, Illinois College (2004–2005)

## Administrative Responsibilities and Experience

*Committee for Oversight of Medical Education (COMSE), Phase 1 Operations Faculty-At-Large, elected position, voting member (Summer 2022-present)*

- Tasks: help evaluate and monitor the quality and outcomes of individual curricular elements in Phase 1 of the new Gateway Curriculum, and make recommendations to the COMSE; identify areas of concern that cross curricular elements and phases and bring these to the attention of the COMSE in a timely manner; help determine if curricular elements are adequate, such that further review by the COMSE is not required
- In general, COMSE serves as an advisory body to the Academic Affairs Committee and the Executive Faculty on matters related to pre-graduation medical education.

*WUSM Committee On Admissions, MD Program, member (Summer 2021-present)*

- Tasks: participate in admissions training, review and rate applications, perform and rate open- and closed-file candidate interviews, participate in decision-making discussions and process, report back to supervisors (Committee Chair and Dean of Admissions).

*Academy of Educators Small Grants Program, Committee Co-Chair (Spring 2022-present)*

- An application-based program, where grant funding is awarded for education research and scholarship projects. Projects must be focused on the scholarship of teaching and learning, rather than biomedical discovery or application.
- Tasks: organize and execute funding workshops, organize and execute calls for applications, review and rate applications, participate in and facilitate funding decision-making, allocate funding, provide administrative support to grantees, ensure completion of funded projects, produce and disseminate publicity for the program and all resultant finished projects

*Content Developer (Gross Anatomy, Neuroanatomy), WUSM curriculum renewal, (2020-present)*

- Ongoing, multi-year, in-depth effort to realign and update anatomical course content and resources to meet the needs of the new Gateway Curriculum

*Module Leader, Content Creator (Gross Anatomy, Neuroanatomy) for thumbroll® app*

- Lead production of, and/or helped produce, photographic dissection guides (56 modules) for the thumbroll app for mobile devices ([www.thumbroll.com](http://www.thumbroll.com)). This massive project provided opportunities for innovative collaboration.
- Tasks: scripting and performing expert-level dissections; subsequent curation and annotation of images.

*Department of Neuroscience Infrastructure Committee, member (Spring 2021-present)*

- Tasks: provide input on infrastructure needs of the department; help to draft, edit, and submit departmental policies on infrastructure use and updates

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*Department of Neuroscience Outreach Committee, member (Spring 2021-present)*

- Tasks: suggest, facilitate, and implement local STEM outreach opportunities

*Anatomy Team COVID-19 Preparedness Chair (Winter 2020-present)*

- Tasks: provide education and enforcement of university COVID-19 work policies for the MD Anatomy Education faculty and staff; write and disseminate lab- and office-suite-specific policies (e.g., PPE, social distancing in specific ways and rooms) to maintain a safe working environment

*Modern Founder and Co-organizer of the “Women in Paleontology” and “Diversity” lectures, luncheons (2017-2019)*

- Tasks: grass-roots-style organizing, with the blessing of the Society of Vertebrate Paleontology, to revive and arrange a yearly luncheon to celebrate, provide visibility for, and help support historically underrepresented groups in vertebrate paleontology
- Luncheons were a massive success (over 80% of conference attendees were present).
- Spurred the creation of a Society Subcommittee of Diversity and a detailed revision of the society’s Code of Conduct

## Teaching

*Teaching Responsibilities at Washington University*

All of my current teaching responsibilities are associated with Human Anatomical and Neuroanatomical education of Phase 1 and Phase 3 medical students at WUSM. In light of COVID-19, I have taught content in recorded **synchronous, asynchronous, and face-to-face (F2F) modalities**. See here for more information: <https://md.wustl.edu/academics/curriculum-post-2020/>

*Gross Anatomy Lectures I teach currently:*

- Organization of the Thorax
- Organization of the GI Tract
- Embryological Development of the GI tract
- Neurovasculature of GI Tract
- Overview of the Pelvic Viscera
- Development of the Urogenital System
- Anatomy of the Spine

*Labs I teach currently:*

- I am part of a seven-member anatomy group that team-teaches all dissection-based gross anatomical and neuroanatomical labs in the MD program at WUSM. All team members are present at all labs, where we teach comprehensive anatomy through close interactions with students in small groups.

*Additional Teaching Experiences (see above: Former Academic Positions and Employment)*

Briefly, I have teaching experience ranging from the elementary classroom to post-graduate lecture halls. I have taught in diverse settings—socioeconomic, cultural, racial, and special education. As an educator, I am comfortable in both leading and supporting roles. I most enjoy teaching introductory and upper-level biology courses, including human anatomy and physiology, comparative anatomy, organismal biology, evolutionary biology, ecology, genetics, mammalogy, herpetology, medical terminology, history of science, and vertebrate paleontology.

## Honors and Awards

- Washington University Academy of Educators, Inducted Member (Fall 2021)
- Living Earth Collaborative, Fellow (2019-present)
- Ohio Center for Ecology and Evolutionary Studies (OCEES), Research Fellow (2014)

## Editorial Experience

*Organizer and Guest Editor for the 29th Annual Karger Workshop in Evolutionary Neuroscience*

- November 9, 2017 in Hyattsville, MD.
- Title: From Fossils to Function: integrative and taxonomically inclusive approaches to vertebrate evolutionary neuroscience.
- Resulting Volume: <https://www.karger.com/Journal/Issue/277542>

## Consulting Relationships

Collaborating Paleontologist (unpaid), St. Louis Science Center

## Funding

*External Funding Sources:*

- PI, Collaborative Research Support Fund, 2018, St. Louis Science Center, \$1,700
- Postdoctoral Travel Award, 2017, American Association of Anatomists, \$250
- Research Collaborator, 2019, Smithsonian Institute of Birds Research Honorarium, \$500
- Graduate Student Research, 2013, Jurassic Foundation Research Grant, \$2880.00
- Graduate Student Research, 2013, Sigma Xi Grant-in-Aid of Research, \$450.00
- Graduate Student Research, 2012, Jackson School of Geosciences Travel Grant, \$400

*Internal Funding Sources*

- Graduate Teaching Assistantship, 2010-2015 OU-HCOM, tuition & stipend
- Graduate Research Fellowship, 2014, OCEES, tuition & stipend
- Graduate Student Enhancement Award, 2013, Ohio University, \$5140.00
- Biomedical Sciences Travel Awards (numerous), 2010-2015, Ohio University, \$4800
- Graduate Student Senate Original Work Grant, 2015, Ohio University, \$750
- Graduate Student Senate Travel Grant, 2011, Ohio University, \$500
- Illinois College Presidential Scholar Award, distributed over 2002-2006, \$30,000
- Illinois College Art Scholar Award, distributed over 2002-2006, \$2,000

## Professional Societies and Organizations

- Society of Vertebrate Paleontology, 2008-present
- J. B. Johnston Club for Evolutionary Neuroscience, 2013-present
- American Association of Anatomists, 2017-present
- Association for Women in Science, 2017-2018
- Society of Integrative and Comparative Biology, 2010-2018
- Geological Society of America, 2009-present
- The Paleontological Society, 2008-present
- Association for Women Geoscientists, 2008-2018
- Association of Avian Veterinarians, 2017-2018
- American Ornithological Association, 2017-2018

## Peer-reviewed publications

Jerison, H.J., C.M. Early, A.A. Farke, **A.C. Morhardt**. *In review*. Digitized endocasts and brains: measurements and analyses of the evolution of 172 fossil and extant vertebrate specimens. PeerJ.

Early, C.M., **A.C. Morhardt**, T.P. Cleland, C.M. Milensky, G.M. Kavich, and H.F. James. 2020. Chemical effects of diceCT staining protocols on fluid-preserved avian specimens. PloS one, 15(9), p.e0238783.

Ksepka, D.T., **Morhardt, A.C.**, et al. 2020. Tempo and Pattern of Avian Brain Size Evolution. Current Biology. 30(11): 2026-2036e3.

**Morhardt, A.C.** 2018. From Fossils to Function: Integrative and Taxonomically Inclusive Approaches to Vertebrate Evolutionary Neuroscience. Brain, Behavior, and Evolution. 91(3): 123-124.

Gignac, P. M., **A. C. Morhardt**, et al. 2016. Diffusible iodine-based contrast-enhanced computed tomography (diceCT): an emerging tool for rapid, high-resolution, 3-D imaging of metazoan soft tissues. Journal of Anatomy. 228(6): 889-909.

## Invited publications (e.g., reviews, book chapters):

Paulina-Carabajal, A., J. A. Bourke, and **A. C. Morhardt**. 2022 (anticipated – delayed due to COVID-19). Sensory Systems in Dinosaurs. In V. Arbour, T. Holtz, and L. Zanno (eds.) The Complete Dinosaur, 3rd Edition. Indiana University Press, Bloomington.

White, L., A. Farke, A. Hall, and **A. C. Morhardt**. 2022 (anticipated – delayed due to COVID-19). Dinosaurs and Education. In V. Arbour, T. Holtz, and L. Zanno (eds.) The Complete Dinosaur, 3rd Edition. Indiana University Press, Bloomington.

### Professional Workshops

Rodrigues, T., Holwerda, F. Hsiou, Hunt-Foster, R. and **A. Morhardt**. Women in Paleontology: A Discussion on Promoting Gender Equality. 79th Annual Meeting of the Society of Paleontology. Brisbane, Australia. Tuesday, October 8, 2019.

Lepore, T., A. Hall., A. Stegner, A. Marcy. **A. C. Morhardt**. Paleontology Education: Staying at the Cutting Edge in Research, Pedagogy, and Outreach. 77th Annual Meeting of the Society of Vertebrate Paleontology. Calgary, Alberta, Canada. August 22, 2017.

Gignac, P.M., N. J. Kley, **A. C. Morhardt**, Z. Li, and M. Colbert. Iodine-Enhanced Soft-Tissue Imaging: An Introductory Workshop for Vertebrate Paleontologists. 75th Annual Meeting of the Society of Vertebrate Paleontology. Dallas, Texas. October 14-17, 2015.

## Invited Speaker/Participant – Professional Meetings

Moore, J., A. Roundtrej, H. Scates Kettler. 2017. Community Standards for 3D Data Preservation. Washington University, St. Louis, MO. February 5-7, 2018. <http://gis.wustl.edu/dgs/cs3dp/>

NESCent Catalysis Meeting on the Evolution of the Avian Brain, Duke University, May 14, 2014. Invited presentation: “Segmenting endocasts into brain regions: Approaches in the WitmerLab.”

## Outreach & Popular Press – Relevant Examples

*Please see my lab website for further details and source links.*

- WashU Press Release: “Clues to ancient past: baby mummy, dinosaur skulls scanned.”
- Earth Touch News: “There’s a lot to learn about dinosaur brains.”
- KMOV Great Day St. Louis—morning show appearance
- St. Louis Public Radio—Science Feature, Dinosaur Brain Size and Evolution
- Dinosaur Brain Evolution, *New Science*, St. Louis Science Center, Member Publication
- BBC Focus Magazine: “Inside the Dinosaur’s Mind: how brains, not brawn, helped the tyrannosaur become king.”
- PBS NOVA, WGBH Boston: “Tiny ‘Coyote of the Cretaceous’ Fills a Gap in the Tyrannosaur Tree.” Author: Katherine J. Wu. May 6, 2019.
- Smithsonian Magazine: “Newly Discovered Bat-Like Dinosaur Reveals the Intricacies of Prehistoric Flight.” Author: Riley Black. May 8, 2019.

## Professional Presentations

\***Morhardt, A. C.** 2020. The good, the bad, and the unossified: current trends in sampling and interpreting cranial endocasts of non-encephalized vertebrate groups. 80th Annual Meeting of the Society of Vertebrate Paleontology. October 12-18, 2020. Cincinnati, Ohio, USA.

\*Invited, with abstract accepted after peer review, but withdrawn due to COVID-19

Gignac, P., Beyl A.R., Gold M.E.L., Gray J., **Morhardt A. C.**, Stout R., Vazquez-Sanroman D., Watanabe A., Wilson M., Kley N.J. 2020. Extending the endocast paradigm: standard and contrast-enhanced computed tomography unite paleontological and neontological neuroimaging. 80th Annual Meeting of the Society of Vertebrate Paleontology. October 12-18, 2020. Cincinnati, Ohio, USA.

Han J., **Morhardt A. C.**, Farke A.A. 2020, Endocranial Morphology of the neoceratopsian *Leptoceratops gracilis* from the Late Cretaceous Hell Creek Formation, Montana, USA. 80th Annual Meeting of the Society of Vertebrate Paleontology. October 12-18, 2020. Cincinnati, Ohio, USA.

Early, C.M., **Morhardt, A.C.**, Milensky, C.M. and James, H.F., 2019, June. Optimizing diceCT-Staining Protocols to Mitigate Potential Degradation of Museum Specimens. In *Journal of Morphology* (Vol. 280, pp. S113-S113).

**Morhardt, A. C.**, C. Campbell, S. Bhalla, M. Steinkruger, M. Miller-Thomas, V. Mellnick, B. Thomas. 2019. Endocranial anatomy and ontogeny of the extinct dinosaur genus *Triceratops* using 3D visualization. JB Johnston Club for Evolutionary Neuroscience Annual Meeting. University Center, Chicago, IL.

**Morhardt, A. C.**, C. Campbell, S. Bhalla, M. Steinkruger, M. Miller-Thomas, V. Mellnick, B. Thomas. 2019. Endocranial Anatomy and Ontogeny in Ornithischian Dinosaurs Using Computed Tomography and 3D-Visualization. International Congress of Vertebrate Morphology, Prague, Czech Republic. *Journal of Morphology*.

**Morhardt, A. C.**, C. Campbell, S. Bhalla, M. Steinkruger, M. Miller-Thomas, V. Mellnick, B. Thomas. 2018. Study of endocranial anatomy and ontogeny in the Late Cretaceous non-avian dinosaur genus *Triceratops* using computed tomography and 3-d visualization. 78th Annual

Meeting of the Society of Vertebrate Paleontology, Albuquerque, NM. *Journal of Vertebrate Paleontology*. Supplement— Meeting Program and Abstracts.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2017. Gross Anatomical Brain Region Approximation (GABRA): a new landmark-based approach for estimating brain regions in archosaurs. 129th Annual Meeting of the American Association of Anatomists, Experimental Biology Conference, Chicago, IL.

Nassif, J. P., J. Bourke, D. G. Cerio, D. L. Dufeu, C. M. Early, **A. C. Morhardt**, W. R. Porter, R. C. Ridgely, A. F. Spaw, and L. M. Witmer. 2016. A digital menagerie: building the WitmerLab's Visible Interactive Anatomy library as an open-access resource for research and education. 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT. *Journal of Vertebrate Paleontology* Supplement—Meeting Program and Abstracts: 195.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2016. Diffusible iodine-based contrast enhancement of large, post-embryonic, intact vertebrates for CT scanning: staining, destaining, and long-term storage. Program & Abstracts of the 11th International Congress of Vertebrate Morphology, Washington, D.C. 2016. *Anatomical Record*, Volume 299, Special Feature: 89–90.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2016. Gross Anatomical Brain Region Approximation (GABRA): a new landmark-based approach for estimating brain regions in archosaurs. Program & Abstracts of the 11th International Congress of Vertebrate Morphology, Washington, D.C. 2016. *Anatomical Record*, Volume 299, Special Feature: 223.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2015. Iodine-based CT Contrast-Enhancement of Vertebrates: best practices for staining, de-staining, and long-term storage of large, postembryonic, intact specimens. The Austin Working Group: advancing contrast-enhanced CT imaging in the Biological Sciences. The University of Texas at Austin & The High-Resolution Xray CT Facility. Austin, Texas.

**Morhardt, A. C.**, G. Hurlburt, R. C. Ridgely, and L. M. Witmer. 2014. EQ in the 21st century: A reassessment of non-avian dinosaur encephalization quotient calculations and implications for modern paleoneurology. 74th Annual Meeting of the Society of Vertebrate Paleontology, Berlin, Germany. *Journal of Vertebrate Paleontology* Supplement—Meeting Program and Abstracts: 191.

**Morhardt, A. C.**, R. C. Ridgely, D. Varricchio, and L. M. Witmer. 2013. New studies of braincase anatomy, brain size, and brain structure in the Late Cretaceous theropod *Troodon formosus* (Dinosauria: Saurischia) based on CT scanning and 3D visualization. 73rd Annual Meeting of the Society of Vertebrate Paleontology, Los Angeles, CA. *Journal of Vertebrate Paleontology* Supplement—Program and Abstracts: 180.

Witmer, L. M., R. C. Ridgely, E. D. Snively, C. M. Holliday, W. R. Porter, J. Bourke, **A. C. Morhardt**. 2013. Analytical and modeling approaches for the digital restoration of dinosaur head functional anatomy within the Visible Interactive Dinosaur project. Program & Abstracts of the 10th International Congress of Vertebrate Morphology, Barcelona 2013. *Anatomical Record*, Volume 296, Special Feature: 292.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2012. From endocast to brain: assessing brain size and structure in extinct archosaurs using Gross Anatomical Brain Region Approximation

(GABRA). 72nd Annual Meeting of the Society of Vertebrate Paleontology, Raleigh, NC. Society of Vertebrate Paleontology—Program and Abstracts: 11.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2011. New studies of brain and inner ear structure in Stegosaurus (Dinosauria: Ornithischia) based on CT scanning and 3D visualization. 71st Annual Meeting of the Society of Vertebrate Paleontology, Las Vegas, NV. Society of Vertebrate Paleontology—Program and Abstracts: 162.

**Morhardt, A. C.**, R. C. Ridgely, and L. M. Witmer. 2011. A brain the size of a walnut: new studies of brain and inner ear structure in Stegosaurus (Dinosauria: Ornithischia) based on CT scanning and 3D visualization. Geological Society of America Northeastern and North-Central Joint Meeting, Pittsburgh, Pennsylvania.

Martiny, A. R., R. C. Ridgely, D. L. Dufeu, W. R. Porter, J. M. Bourke, **A. C. Morhardt**, E. D. Snively, and L. M. Witmer. 2010. Promoting a culture of outreach within an active university research lab setting: WitmerLab at Ohio University. 70th Annual Meeting of the Society of Vertebrate Paleontology, Pittsburgh, PA.

**Morhardt, A. C.**, M. F. Bonnan, T. Keillor. 2009. Dinosaur smiles: correlating premaxilla, maxilla, and dentary foramina counts with extra-oral structures in amniotes and its implications for dinosaurs. 69th Annual Meeting of the Society of Vertebrate Paleontology, Bristol, UK. Society of Vertebrate Paleontology—Program and Abstracts: Volume 29, Supp 3.