

Donald Greene Cerio, Ph.D.

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Education

Ohio University

PhD, Ecology & Evolutionary Biology, degree earned August 17, 2019
Thesis: The Visual Apparatus of Avian Dinosaurs and Other Diapsids:
Anatomical Correlates of Behavior and Evolution
Advisor: Lawrence M. Witmer, PhD
Department of Biological Sciences
Athens, OH

Cornell University

Bachelor of Arts, Biological Sciences – Ecology & Evolutionary Biology, degree
earned May 2009
Ithaca, NY

Publications

Cerio DG and LM Witmer. 2020. Modeling visual fields using Virtual Ophthalmoscopy: Incorporating geometrical optics, morphometrics, and 3D visualization to build an interdisciplinary technique. *Vision Research*. DOI: 10.1016/j.visres.2019.11.007.

Cerio DG and LM Witmer. 2019. Intraspecific variability and symmetry of the inner-ear labyrinth in a population of wild turkeys: implications for paleontological reconstructions. *PeerJ*. DOI: 10.7717/peerj.7355.

Gignac PM, Kley NJ, Clarke JA, Colbert MW, Morhardt AC, **Cerio D**, Cost IN, Cox PG, Daza JD, Early CM, Echols MS, Henkeleman RM, Herdina AN, Holliday CM, Li Z, Mahlow K, Merchant S, Müller J, Orsbon CP, Paluh DJ, Thies ML, Tsai HP, and LM Witmer. 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.

Manuscripts in Preparation

Cerio DG and LM Witmer. Orbital soft tissues, bones, and allometry: implications for the size and position of crocodylian eyes. *Anatomical Record*.

Cerio DG and LM Witmer. The visual apparatus of extant diapsids: Eye morphometry, adnexal soft tissues, and their relation to the bony orbit, visual fields, the vestibular system, and behavior. *Anatomical Record*.

Cerio DG, Ridgely RC, Brant A, Giesige L, and LM Witmer. Intraspecific variability in form and symmetry of the endocranial cast in a population of wild turkeys: implications for paleontological reconstructions. *PeerJ*.

Degrange FJ, **Cerio DG**, Tambussi CP, Ridgely RC, and LM Witmer. In preparation. Building a terror bird: evolutionary trade-offs between the visual system and cranial biomechanics in a clade of extinct cursorial predatory birds (Aves, Cariamiformes). *Nature*.

Early CM, **Cerio DG**, Porter WR, Ridgely RC, and LM Witmer. In preparation. The skull and neurosensory system of the extinct giant moa, *Dinornis robustus* (Aves, Palaeognathae) with implications for the behavioral role of vision in moa. *Anatomical Record*.

Teaching Experience

August 2018 – May 2021

Adjunct Lecturer, **Pathways to Health and Wellness** curriculum, Department of Biomedical Sciences, Heritage College of Osteopathic Medicine, Ohio University. Aided medical students in dissections in all anatomy courses and helped students to use anatomy to diagnose simulated patients. Led six weeks of lab in fall 2019 and two weeks in fall 2020, coordinating creation of learning objectives and lab logistics across the three HCOM campuses.

January 2013 – August 2018

Teaching Assistant, **BIOS 6580, 6590, 6600 Clinical Gross Anatomy series, BIOS 6610, 6620 Microanatomy series, and BIOS 6820 Neuromorphology**, Department of Biomedical Sciences, Heritage College of Osteopathic Medicine, Ohio University. Aided medical students in dissections. Prepared and led recitation sections in histology. Participated in the creation and grading of practical examinations, weekly quizzes, and larger exams.

January – April 2016

Teaching Assistant, **BIOS 3015 Human Anatomy Lab**, Department of Biological Sciences, Ohio University. Coordinated dissection of cadavers by undergraduate TAs and led demonstrations of anatomy for undergraduate students.

Presentations at Professional Society Meetings

2019 14. **Cerio DG**, Degrange FJ, Tambussi CP, Ridgely RC, and LM Witmer. 2019. "Optical properties, ecological differences, and Virtual Ophthalmoscopy: Morphometry of optical parameters in diapsids and a case study in restoring visual fields in terror birds (Aves: Phorusrhacidae)." Program & Abstracts of the 12th International Congress of Vertebrate

Morphology, Prague, Czech Republic. *Journal of Morphology*, Volume 280, Special Feature: S96.

- 2018 13. **Cerio DG**, Degrange FJ, Tambussi CP, Ridgely RC, and LM Witmer. 2018. "Modeling visual abilities in extinct species using Virtual Ophthalmoscopy, with a case study in predicting eye size, optical parameters, and visual fields in terror birds (Aves: Phorusrhacidae)." 78th Annual Meeting of the Society of Vertebrate Paleontology, Albuquerque, NM.
12. Witmer LM, Porter WR, **Cerio DG**, Nassif JP, Caggiano EG, Griffin CA, and RC Ridgely. 2018. "3D visualization of vertebrate soft tissues using spiceCT (Selectively Perfusable Iodine-based Contrast-Enhanced CT) as a rapid alternative to diceCT." 130th Annual Meeting of the American Association of Anatomists, Experimental Biology Conference, San Diego, CA.
11. **Cerio DG** and LM Witmer. 2018. "Visual Fields of Dinosaurs and their Extant Relatives: Bony Evidence and Soft-Tissue Reconstruction." Annual Meeting of the Society for Integrative and Comparative Biology, San Francisco, CA.
10. Caggiano EG, **Cerio DG**, Porter WR, Ridgely RC, and LM Witmer. 2018. "Avian nasal salt glands: anatomy and its relevance for inferring the behavior and habitat preferences of extinct birds." Annual Meeting of the Society for Integrative and Comparative Biology, San Francisco, CA.
9. Witmer LM, Porter WR, **Cerio DG**, Nassif JP, Caggiano EG, Griffin CA, and RC Ridgely. 2018. "spiceCT—Selectively Perfusable Iodine-based Contrast-Enhanced CT, a rapid alternative to diceCT for 3D visualization of vertebrate soft tissues." Annual Meeting of the Society for Integrative and Comparative Biology, San Francisco, CA.
- 2017 8. Caggiano EG, **Cerio DG**, Porter WR, Ridgely RC, and LM Witmer. 2017. "The nasal salt gland of extant birds: anatomical structure and its relevance for inferring the behavior and habitat preferences of extinct birds." 129th Annual Meeting of the American Association of Anatomists, Experimental Biology Conference, Chicago, IL.
- 2016 7. Nassif JP, Bourke J, **Cerio DG**, Dufeu DL, Early CM, Morhardt AC, Porter WR, Ridgely RC, Spaw AF, and LM 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*: 108.

6. Caggiano EG, **Cerio DG**, Porter WR, Ridgely RC, and LM Witmer. 2016. "The anatomy of the nasal salt gland of extant birds and its relevance for inferring the behavior and habitat preferences of extinct birds and other archosaurs." 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT. *Journal of Vertebrate Paleontology Supplement—Meeting Program and Abstracts*: 108.
5. **Cerio DG** and LM Witmer. 2016. "Soft tissue reconstruction and visual fields of dinosaurs and their extant relatives." 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT. *Journal of Vertebrate Paleontology Supplement—Meeting Program and Abstracts*: 113.
4. **Cerio DG** and LM Witmer. 2016. "The visual apparatus of archosaurs: correlates of orbital anatomy, eye size, and behavior." Program & Abstracts of the 11th International Congress of Vertebrate Morphology, Washington, D.C. *Anatomical Record, Volume 299, Special Feature*: 232–233.
3. Early CM, Ridgely RC, Porter WR, **Cerio DG**, and LM Witmer. 2016. "The skull and endocranial anatomy of the extinct giant moa *Dinornis robustus* (Aves: Palaeognathae) and implications for the behavioral role of vision in moa." Program & Abstracts of the 11th International Congress of Vertebrate Morphology, Washington, D.C. *Anatomical Record, Volume 299, Special Feature*: 223–224.
- 2015 2. **Cerio DG**, Ridgely RC, and LM Witmer. 2015. "The eyes have it: bounding estimates of eye size in dinosaurs with soft-tissue reconstruction and the extant phylogenetic bracket approach." 75th Annual Meeting of the Society of Vertebrate Paleontology, Dallas, TX. *Journal of Vertebrate Paleontology Supplement—Meeting Program and Abstracts*: 104.
- 2014 1. **Cerio DG**, Ridgely RC, and LM Witmer. "Peering into the past: Soft-tissue reconstruction, 3D modeling, and the visual apparatus of the extant relatives of dinosaurs." 74th Annual Meeting of the Society of Vertebrate Paleontology, Berlin, Germany. *Journal of Vertebrate Paleontology Supplement—Meeting Program and Abstracts*: 105.

Relevant Skills

3D computer visualization

Experienced with 3D modeling and quantitative analysis in the animation software Maya (Autodesk). Additionally, experienced with the creation and use of virtual anatomical resources, including generating 3D PDFs and Sketchfab animations. Skills include modeling of soft tissues in the skulls of both extant and extinct taxa, as well as 3D rendering using both the

Mental Ray and Arnold renderers. Additionally, developed a quantitative technique (Virtual Ophthalmoscopy) to make measurements of the visual system of birds within the Maya interface.

Computer segmentation of CT-scan data

Experienced with virtual dissection and visualization of CT-scanned specimens in the program Avizo (ThermoScientific). Extensive experience with segmentation of both contrast-enhanced CT scans and traditional CT scans.

diceCT

Experienced with iodine-based contrast enhancement for CT scanning. Have participated in the staining of dozens of diverse specimens. Was a member of the working group that published on diceCT as a technique, and am an author on said publication.

Geometric morphometrics

Experienced with the use of the R package *geomorph*, including assignment of landmarks and sliding semilandmarks, analyses of symmetry, and analyses of allometric influences.

Gross dissection

Experienced extensively in the dissection of the crania of sauropsids, especially the soft tissues of the orbit. Additional experience in the dissection of postcrania, especially of the upper limb, in passeriform birds.

Human medical anatomy and gross dissection

Experienced extensively in dissecting all regions of the human body, as well as removing brains from crania in preparation for the neuromorphology course. To date, I have participated in the removals of 24 brains, twenty-two of which I have removed on my own. Coursework taken includes BIOS 6580, BIOS 6590, BIOS 6600, the Clinical Gross Anatomy series; and BIOS 6820, Neuromorphology.

Human microanatomy

Experienced in the use and upkeep of physical microscopes, as well as with the identification of histological structures in all systems of the body. Additionally, I am experienced with online e-slides like those published by the company Aperio. Coursework taken includes BIOS 6610 and BIOS 6620, Microanatomy I and II.

Remote learning technologies

Experienced with the use of Microsoft Teams and Outlook, including setting meetings, sharing files and the screen, making recordings, and troubleshooting microphone and camera problems. Experienced with the use of Panopto to make pre-recorded lectures and upload those lectures

to Blackboard.

Statistical analysis

Experienced with the use of the R language and of the R-Studio interface for data analysis. Experience includes use of phylogenetic regression analyses, phylogenetic analyses of variance and covariance, ancestral character state reconstruction, principal components analysis, and discriminant function analysis. Coursework taken includes: PBIO 5150 and PBIO 8700, Univariate and Multivariate Statistical Methods; and BIOS 5570, Animal Systematics.

Vascular injection

Experienced with vascular injection and perfusion of iodine-based contrast agents for CT scanning. Was a member of the team to develop and hone this technique (spiceCT), in the WitmerLab. Also skilled with differential-contrast/dual-vascular injection (DCDVI) using a barium-latex injection medium.

Grants Accepted

Jackson School of Geosciences Student Travel Grant, August 2018. \$400.
Ohio University Student Enhancement Award, February 2017. \$5161.
Jurassic Foundation grant program, November 2016. \$2854.
Sigma Xi Grants in Aid of Research, March 2016. \$450.
Graduate Student Senate Original Work Grant, 2015. \$750.

Professional Society Memberships

Society of Vertebrate Paleontology, since 2013.
International Society of Vertebrate Morphology, since 2016.
Society for Integrative and Comparative Biology, since 2017.

Other Professional Experience

May 2011 – August 2011

Research Assistant, University of Tennessee, Knoxville

- Research site in Fort Riley, Kansas.
- Project leader: Emily Hockman, graduate student.
- Birdcall surveys, GPS/GIS navigation, radio-collar tracking, captures-and-release.

Sept. 2009 – August 2010

Research Assistant, Cornell University Museum of Vertebrates

- Lab of Dr. Kimberly Bostwick.
- Functional morphology of avian wing sounds.
- Dissection, microCT analysis, high-speed video-recording, behavioral surveys.

Diversity, Equity, and Inclusion Activities

Institution-led educational activities

Addressing Anti-Blackness on Campus: Implications for Educators and Institutions, 6/24/2020.

Attended this nationwide webinar, which broke down what anti-Black racism is and how it could manifest in our and our colleagues' everyday actions. It also provided some fundamental strategies and resources with which to combat anti-Black racism.

Implicit Bias Training for OU-HCOM Admissions, 9/11/2020.

Attended this HCOM-focused webinar, the goal of which was to define "bias," explain that all humans have biases, describe how subconscious biases can impact interactions and decisions, and discuss how to combat biases in the context of admissions interviews.

Allyship Training for OU-HCOM Employees, Summer – Fall 2020.

Completed five online modules:

"Allyship Training," by Ryan Clopton-Zymler.

"The Language of Inclusion," by Ryan Clopton-Zymler.

"The Lack of Diversity in Medicine is a National Emergency: The Way Forward," by Dr. Quinn Capers.

"Disparities in Maternal Health," by Joselyn Hines.

"Disability & Medicine," panel discussion between Prof. Ruth Colker, Dr. Lisa Meeks, Christy Jenkins, and David Hartman.

Self-guided educational readings

Faces at the Bottom of the Well by Derrick Bell. Read May-June 2020.

A People's History of the United States by Howard Zinn. Read July-December 2020.

Stamped from the Beginning by Ibram X. Kendi. August 2020-currently reading.

Committee Service

2019 – Present

Interviewer, OU-HCOM Student Selection Committee, Athens, Ohio

2015 – 2017

Treasurer, Biological Sciences Graduate Society, Ohio University, Athens, Ohio

2013 – 2019

Member, Biological Sciences Graduate Society, Ohio University, Athens, Ohio

Outreach and Community Service

2019 6. Science Café Series, February 2019, Baker Student Center, Ohio University, Athens, Ohio.

2015 5. Young Scholars OHIO, October 2015, Life Science Facility, Ohio University, Athens, Ohio.

2013 4. Innovation Café, November 2013, Baker Student Center, Ohio University, Athens, Ohio.

3. Young Scholars OHIO, October 2013, Life Science Facility, Ohio University, Athens, Ohio.

2. Dinosaur Day for children and their parents, June 2013, Athens County Public Library, Athens, Ohio.

2012 1. Dinosaur Day for children and their parents, December 2012, Ohio Valley Museum of Discovery, Athens, Ohio.