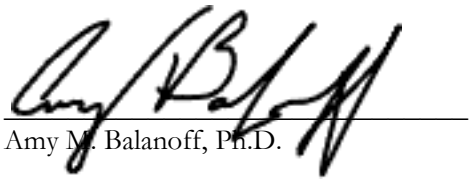
CURRICULUM VITAE
Johns Hopkins University



Amy M. Balanoff, Ph.D.

May 10, 2023

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

University

2016 Adjunct Faculty (Secondary Appointment), Center for Functional Anatomy and Evolution, Johns Hopkins University School of Medicine

2019 Assistant Research Professor (Primary Appointment), Department of Psychological and Brain Sciences, Johns Hopkins University

2022 Co-Director of Undergraduate Studies, David S. Olton Behavioral Biology Program, Johns Hopkins University

Other

2013 Research Associate, Division of Paleontology, American Museum of Natural History, New York, NY

2021 Research Associate, Department of Paleobiology, Smithsonian Institution, United States National Museum of Natural History, Washington D.C.

Personal Data

Business Address	3400 North Charles Street David S. Olton Program in Behavioral Biology Baltimore, MD 21218
Building and Room	Dunning 418B
Tel:	410-516-8876
E-mail:	abalano2@jhu.edu

Education and Training

Undergraduate

2000 BS, Geology, The University of Texas at Austin

Doctoral/Graduate

2003 MS, Geology, The University of Texas at Austin

2007 MPhil, Earth and Environmental Sciences, Columbia University, New York, NY

2011 PhD, Earth and Environmental Sciences, Columbia University, New York, NY

Postdoctoral

2011-2013 NSF Tree of Life Postdoctoral Fellow, Division of Paleontology, American Museum of Natural History, New York, NY

2013-2016 Postdoctoral Researcher/Instructor, Department of Anatomy, Stony Brook University School of Medicine

PUBLICATIONS:

Original Research [RO]

1. Bever GS, Rowe T, Ekdale EG, Macrini TE, Colbert MW, **Balanoff AM**. 2005. Comment on "Independent Origins of Middle Ear Bones in Monotremes and Therians" (I). *Science* 309:1492a.
2. Holliday CM, Ridgely RC, **Balanoff AM**, Witmer LM. 2006. Cephalic vascular anatomy in flamingos (*Phoenicopterus ruber*) based on novel vascular injection and CT imaging analyses. *Anatomical Record* 288A:1031-1041
3. **Balanoff AM**, Rowe T. 2007. Osteological description of an embryonic skeleton of the extinct elephant bird, *Aepyornis* (Palaeognathae: Ratitae). Society of Vertebrate Paleontology Memoir 9. *Journal of Vertebrate Paleontology* 27(suppl. to 4):1-53.
4. **Balanoff AM**, Norell MA, Grellet-Tinner G, Lewin MR. 2008. Digital preparation of a probable neoceratopsian preserved within an egg, with comments on microstructural anatomy of ornithischian eggshells. *Naturwissenschaften* 95:493-500.
5. **Balanoff AM**, Xu X, Kobayashi Y, Matsufune Y, Norell MA. 2009. Cranial osteology of the theropod dinosaur *Incisivosaurus gauthieri* (Theropoda: Oviraptorosauria). *American Museum Novitates* 3651:1-35.

6. Norell MA, Makovicky PJ, Bever GS, **Balanoff AM**, Clark JM, Barsbold R, Rowe T. 2009. A review of the Mongolian Cretaceous dinosaur Saurornithoides (Troodontidae: Theropoda). *American Museum Novitates* 3654:1-63.

7. **Balanoff AM**, Bever GS, Ikejiri T. 2010. The braincase of *Apatosaurus* (Dinosauria: Sauropoda) based on computed tomography of a new specimen with comments on variation and evolution in sauropod neuroanatomy. *American Museum Novitates* 3677:1-29.

8. Brusatte SL, Norell MA, Carr TD, Erickson GM, Hutchinson JR, **Balanoff AM**, Bever GS, Choiniere JN, Makovicky PJ, Xu X. 2010. Tyrannosaur paleobiology: new research on ancient exemplar organisms. *Science* 329:1481-1485.

9. Bever GS, Brusatte SL, **Balanoff AM**, Norell MA. 2011. Variation, variability, and the origin of the avian endocranium: insights from the anatomy of *Alioramus altai* (Theropoda: Tyrannosauroidea). *PLoS ONE* 6(8): e23393. doi:10.1371/journal.pone.0023393.

10. Ksepka DT, **Balanoff AM**, Walsh S, Revan A, Ho A. 2012. Evolution of the brain and sensory organs in Sphenisciformes: new data from the stem penguin *Paraptenodytes antarcticus*. *Zoological Journal of the Linnean Society* 166:202-219.

11. **Balanoff AM**, Norell MA. 2012. Osteology of *Khaan mckennai* (Oviraptorosauria: Coelurosauria). *Bulletin of the American Museum of Natural History* 372:1-77.

12. Bever GS, Brusatte SL, Carr TD, Xu X, **Balanoff AM**, Norell MA. 2013. The braincase anatomy of the Late Cretaceous dinosaur *Alioramus* (Theropoda; Tyrannosauroidea). *Bulletin of the American Museum of Natural History* 376:1–72.

13. **Balanoff AM**, Bever GS, Rowe TB, Norell MA. 2013. Evolutionary origins of the avian brain. *Nature* 501:92-96. doi:10.1038/nature12424

14. Ksepka DT, **Balanoff AM**, Bell MA, Houseman MD. 2013. Fossil grebes from the Truckee Formation (Miocene) of Nevada and a new phylogenetic analysis of Podicipediformes (Aves). *Palaeontology* 56:1149-1169.

15. **Balanoff AM**, Bever GS, Norell MA. 2014. Reconsidering the avian status of the oviraptorosaur brain (Theropoda, Oviraptorosauria). *PLoS ONE* 9: e113559. doi:10. 1371/journal.pone.0113559.

16. Varricchio DJ, **Balanoff AM**, Norell MA. 2015. Re-identification of avian embryonic remains from the Cretaceous of Mongolia. *PLoS ONE* 10(6): e0128458. doi:10.1371/journal.pone.0128458.

17. **Balanoff AM**, Smaers JB, Turner AH. 2016. Brain modularity across the theropod-bird transitions: testing the influence of flight on neuroanatomical variation. *Journal of Anatomy* 209:204-214.

18. Smith NA, **Balanoff AM**, Ksepka DT. 2016. Symposium on 'evolving approaches for studying the anatomy of the avian brain': Introduction. *Journal of Anatomy* 229:171-172.

19. **Balanoff AM**, Bever GS. 2017. The role of endocasts in brain evolution. *In*: J. Kaas (ed.), *Evolution of the Nervous System*, 2nd ed., vol. 1, pp. 223-241. Oxford, Elsevier.

20. Fabbri M, Koch NM, Pritchard AC, Hanson N, Hoffman E, Bever GS, **Balanoff AM**, Morris ZS, Field DJ, Camacho J, Rowe TB, Norell MA, Smith RM, Abzhanov A, Bhullar BAS. 2017. The skull roof tracks the regions of the brain evolutionarily and ontogenetically in the deep history of Archosauria. *Nature Ecology & Evolution* 1:1543-1550.

21. Wang S, Stiegler J, Wu P, Chuong C-M, Hu D, **Balanoff A**, Zhou T, Xu X. 2017. Heterochronic truncation of odontogenesis in theropod dinosaurs provides insight into the macroevolution of avian beaks. *Proceedings of the National Academy of Sciences* 114:10930-10935.

22. Norell MA, **Balanoff AM**, Barta DE, Erickson GM. 2018. A second specimen of *Citipati osmolskae* associated with a nest of eggs from Ukhaa Tolgod, Omnogov Aimag, Mongolia. *American Museum Novitates* 3899:1-44.

23. **Balanoff AM**, Norell MA, Hogan AVC, Bever GS. 2018. The endocranial cast of oviraptorosaur dinosaurs and the increasingly complex, deep history of the avian brain. *Brain Behavior and Evolution* 91:125-135.

24. Watanabe A., Gignac PM, **Balanoff AM**, Green T, Kley N, Norell MA. 2019. Are endocasts good proxies for brain size and shape in archosaurs throughout ontogeny? *Journal of Anatomy* 234:291-305.

25. Ksepka DT*****, **Balanoff AM***, Smith NA*****, et al. 2020. Tempo and pattern of avian brain size evolution. *Current Biology* 30:2026-2036. * co-first authors [cover art]

26. Hogan AVC, Watanabe A, **Balanoff AM**, Bever GS. 2020. Comparative growth in the olfactory system of the developing chick with considerations for evolutionary studies. *Journal of Anatomy* 237:225-240. [cover art and co-winner of "Runner-up Best Paper Prize for 2020" in the *Journal of Anatomy*]

27. King JL, Sipla JS, Georgi JA, **Balanoff AM**, Neenan JM. 2020. The endocranium and trophic ecology of *Velociraptor mongoliensis*. *Journal of Anatomy* 237:861-869.

28. **Balanoff AM,** Bever GS. 2020. The role of endocasts in brain evolution. *In*: J. Kaas (ed.), *Evolutionary Neuroscience*, 2nd Edition. Oxford, Elsevier.

29. Smaers JB, Rothman RS, Hudson D, **Balanoff A,** et al. 2021. The evolution of mammalian brain size. *Science Advances* 7:eabe2101.

30. Choiniere J, Neenan JM, Schmitz L, Ford DP, Chapelle KEJ, **Balanoff AM**, et al. 2021. Specialized nocturnal sensory adaptations in alvarezsauroid dinosaurs. *Science* 372:610-613.

31. Watanabe A, **Balanoff AM**, P.M. Gignac, M.E.L. Gold, M.A. Norell. 2021. Novel neuroanatomical integration and scaling define avian brain shape evolution and development. *eLife* 10: e68809. DOI: 10.7554/eLife.68809

32. Ksepka DT, Early CM, Dzikiewicz K, **Balanoff AM**. FirstView. Osteology and neuroanatomy of a Miocene phasianid (Aves: Galliformes) from the Miocene of Nebraska. *Journal of Paleontology*.

Methods and Techniques [MT]

1. Tonna JE, **Balanoff AM**, Lewin MR, Saandari N, Wintermark M. 2010. Potentially low cost solution to extend use of early generation computed tomography. *Western Journal of Emergency Medicine* 11:463-469.

2. **Balanoff AM**, Bever GS, Colbert CW, Clarke JA, Field DJ, Gignac PM, Ksepka DT, Ridgely R, Smith NA, Torres C, Walsh S, Witmer L. Best practices for digitally constructing endocranial casts: examples from birds and their dinosaurian relatives. *Journal of Anatomy*. 2015; 229(2): 173-190.

3. Salerno M, Ferrer E, Wei E, Li X, Gao W, **Balanoff AM***, Vaska P*. 2019. Behavioral neuroimaging in birds using PET. *Journal of Neuroscience Methods* 317:157-164. *corresponding authors

Review Articles [RA]

1. **Balanoff AM**, Bever GS. The role of endocasts in the study of brain evolution. In Kass J, ed. Evolution of Nervous Systems, 2nd edition; pp. 223-241. 2016; Elsevier Press, London.

2. **Balanoff AM**, Bever GS. The role of endocasts in the study of brain evolution. In Kass J, ed. Evolutionary Neuroscience, 2nd edition; pp. 29-49. 2020; Elsevier Press, London.

Book Chapters [BC]

1. Choiniere J, **Balanoff AM**, Zanno L. In press. Early Maniraptorans. *The Dinosauria,* 3rd ed. Springer.

Media Releases or Interviews [MR]

2008 Featured in "How do you like your dino eggs?" by Jeff Hecht. New Scientist 2658: 70.

2009 Featured in "Set your CT scanner to 'kill' and look inside some fossils." by Amy Barth. Discovery Magazine. August 26, 2009.

2011 Featured in "Digimorph: bringing fossils to life." by Miles O'Brien. Science Nation.

2012 Featured in "Scanner located on UT campus allows scientists to research nearly anything." The Daily Texan. July 11, 2012.

2013 Publication of "Evolutionary Origins of the Avian Brain" in *Nature* received coverage in over 150 media outlets including BBC News, NBC News, Los Angeles Times, National Geographic, Christian Science Monitor, Spiegel, and Science Friday on NPR.

2016 Research featured in Rotunda (Winter 2016, vol. 41), American Museum of Natural History Publication, New York, NY.

2016 Quoted as expert in the Guardian (https://www.theguardian.com/science/2016/oct/27/scientists-discover-first-fossilised-dinosaur-brain-tissue) and on NPR (http://www.npr.org/sections/thetwo-way/2016/10/27/499579906/researchers-say-theyve-found-a-bit-of-fossilized-dinosaur-brain) about Brasier et al. (2016) fossilized brain paper.

2016 Quoted as expert in New York Times (https://www.nytimes.com/2016/11/11/science/dinosaur-mud-dragon.html).
2018 Quoted as expert in Science Magazine (http://www.sciencemag.org/news/2018/05/fossils-reveal-how-ancient-birds-got-their-beaks)
2019 Quoted as expert in Nature News (https://www.nature.com/articles/d41586-019-02174-7?fbclid=IwAR08_zh1SQB4ZRM9RHl9bq0skBUiACHddEYZdQf-hjTAQtaju4-UzgssaIY)
2020 2020. Quoted as expert in Science Magazine (https://science.sciencemag.org/content/367/6484/1290)
2020 2020. "Tempo and pattern of avian brain size evolution" covered in multiple media outlets including CNN (https://www.cnn.com/2020/04/23/world/bird-brain-sizes-scn/index.html) and Science Daily (https://www.sciencedaily.com/releases/2020/04/200423130506.htm).
2021 "The evolution of mammalian brain size" covered in multiple media outlets including The Guardian (https://www.theguardian.com/science/2021/apr/28/big-brained-mammals-may-just-have-small-bodies-study-suggests) and Science Daily (https://www.sciencedaily.com/releases/2021/04/210429090227.htm)
2021 "Specialized nocturnal sensory adaptations in alvarezsauroid dinosaurs" covered in multiple media outlets including Discover Magazine (https://www.discovermagazine.com/planet-earth/nocturnal-dinosaurs-night-vision-and-superb-hearing-in-a-small-theropod) and CNN (https://www.cnn.com/2021/05/06/world/dinosaur-ears-behavior-scn/index.html)
2021 Interviewed by National Geographic reporter Michael Greshko about sociality in non-avian dinosaurs
2022 Quoted as expert in BBC story "Why Human Brains Were Bigger 30,000 Years Ago" (https://www.bbc.com/future/article/20220503-why-human-brains-were-bigger-3000-years-ago)
2023 Quoted as expert in Washington Post article "The *T. rex* may have been a lot smarter than you thought" by Dino Grandoni (https://www.washingtonpost.com/climate-environment/2023/01/09/t-rex-brain-study/)
2023 Quoted as expert in *Science* article "Some dinos may have been as brainy as modern primates" by Rodrigo Perez Ortega (https://www.science.org/content/article/some-dinos-may-have-been-brainy-modern-primates-controversial-study-argues)

FUNDING

EXTRAMURAL Funding

Research Extramural Funding

4/1/15 – 3/31/20 Unraveling the Deep History of Avian Neurological Complexity: Implications for the Origins of Flight and Organization of the Modern Avian Brain
NSF-DEB-1801224
National Science Foundation, Environmental Biology
$521,296
Role: PI
Co-PIs: Bever GS, Gignac PM, Norell MA

5/2014 A Deeper Look into the Avian Brain: Using Modern Imaging to Unlock Ancient Endocasts
National Evolutionary Synthesis Center (NESCent), Catalysis Meeting
$50,000
Role: Co-PI
Co-PIs: Ksepka D, Smith NA

5/2009 – 5/2011 Phylogeny, ontogeny, and endocranial evolution of Oviraptorosauria (Theropoda: Coelurosauria)
NSF-DDIG-0909970
National Science Foundation, Dissertation Improvement Grant, Division of Environmental Biology
$10,790

2009 Graduate School of Arts and Sciences International Travel Fellowships
Columbia University
$11,500
Role: PI

EDUCATIONAL ACTIVITIES

Educational Focus

My educational efforts as a lecturer at Johns Hopkins University have focused on the organization and evolution of the nervous system within vertebrates, evolutionary theory, and our own human evolutionary history. Towards these efforts, I

have led both lecture-based courses as well as seminars. My approach is guided by pedagogical theory, but my goal is always to encourage and inspire students to challenge themselves.

Teaching

Classroom instruction

2000 – 2002 Teaching Assistant, Department of Geology, University of Texas at Austin: *The Age of Mammals, Morphology of the Vertebrate Skeleton, Plate Tectonics and Earth History, Evolution and Development of the Vertebrate Skeleton, The Age of Dinosaurs.*

2006 Teaching Assistant, Department of Earth and Environmental Sciences, Columbia University, *Plant Ecophysiology*.

2008 Teaching Assistant, Department of Earth and Environmental Sciences, Columbia University, *Solid Earth Systems*.

2014 Teaching Assistant, Richard Gilder Graduate School, American Museum of Natural History, Vertebrate Paleontology

2013 – 2016 Instructor, Stony Brook University School of Medicine, *The Body*.

2018 – present Instructor, David S. Olton Behavioral Biology Program, Johns Hopkins University: *First Year Seminar: Biology in Deep Time*, *Comparative Neuroanatomy*, *Human Origins*, *Senior Seminar in Behavioral Biology*

Spring 2023 Instructor, David S. Olton Behavioral Biology Program, Johns Hopkins University: *Behavioral Evolution Lab*

Mentoring

Pre-doctoral Advisees /Mentees

2006 Amy Ho and Ariel Revan, high school research project at the American Museum of Natural History. Project title: "Endocranial anatomy of an extinct penguin". Resulted in publication in Zoological Journal of the Linnean Society.

2010 Wendy DeWolf, High-school research project at the American Museum of Natural History. Project title: "Endocranial anatomy of *Alioramus altai*"

Summer 2011 Assisted in mentoring undergraduate in NSF-funded Research Experience for Undergraduates program. Project title: "Morphology of the lamniform inner ear".

Summer 2013 Assisted in mentoring undergraduate in NSF-funded Research Experience for Undergraduates program at the American Museum of Natural History. Project title: "Tomographic segmentation analysis of sawfish skeletal morphology".

20152016 Mentor to three undergraduate students at Stony Brook University. Part of the NSF Collaborative Grant on avian brain morphology and function.

2018 – 2020 August Bratti, B. A. Behavioral Biology, B.S., Biomedical Engineering, The Johns Hopkins University (Lab researcher; currently, 2nd year M.D. student at Johns Hopkins).

2017 – 2020 Michael Carter, B.A. Honors, Behavioral Biology, The Johns Hopkins University; (Lab researcher; currently, 3rd year M.D. student at Drexel University).

2020/2021 Natalie Aston, Yoko Yamashita, Miri Cazes, Jessica Dure, Steph Messiha, Emma Gustavson, Undergraduate Students, Behavioral Biology, Johns Hopkins University (lab researchers)

Summer 2021 Kareem Chambers, REU Behave program, Johns Hopkins University

2021 – 2022 Justin Baek, Miri Cazes, Molly Ma, Shourya Arashanapalli, Undergraduate Students, Behavioral Biology, Johns Hopkins University (Lab researchers).

Fall 2021 Undergraduate Honors Thesis supervisor to Natalie Aston in Behavioral Biology

Spring 2022 Mentor for research presented by Miri Cazes and Molly Ma, DREAMS symposium for undergraduate research, Johns Hopkins University

2019 – present Faculty advisor to ~25 undergraduate students in the David S. Olton Behavioral Biology Program, Johns Hopkins University

Summer 2023 Faculty mentor, Provost's Undergraduate Research Award (PURA) to Kaiyuan Du, Johns Hopkins University

Post-doctoral Advisees /Mentees

2015 – 2017 Elizabeth Ferrer, Ph.D., American Museum of Natural History, New York, NY; co-advisor.

Thesis committees

2021 Natalie Aston, Undergraduate Honors Thesis Committee (advisor), Differences in medial and lateral cerebellar regions in pigeons, Behavioral Biology Program, Johns Hopkins University.

2022 Stephanie Palmer, DBO Examining Committee member (alternate), Center for Functional Anatomy and Evolution, Johns Hopkins School of Medicine

present Fernando Torres, DBO Examining Committee member (alternate), Center for Functional Anatomy and Evolution, Johns Hopkins School of Medicine

present Alexander Beyl, External dissertation proposal committee member, The evolution of nervous and other non-myological soft tissue structures within the crocodylomorph skull, Stony Brook University

Educational Program Building / Leadership

2000 Member of steering committee for the best technical session talk, the Department of Geological Sciences, The University of Texas.

2000 – 2001 Member at large, Graduate Student Executive Committee, Department of Geological Sciences, The University of Texas at Austin.

2008 Member at large, graduate student advisory committee, American Museum of Natural History.

2018 – present Evaluator for Behavioral Biology, DREAMS symposium for Undergraduate Research

2019 – present Committee member, David S. Olton Behavioral Biology Program Committee, Johns Hopkins University

2019 – present Faculty advisor, Behavioral Biology Student Steering Committee, Johns Hopkins University

2022 – present Co-Director of Undergraduate Studies, Behavioral Biology Program, Johns Hopkins University

RESEARCH ACTIVITIES

Research Focus

My research aims to integrate molecular, developmental, and functional data with the fossil record in order to better understand the evolutionary relationship between structural and behavioral complexity. I am interested in how the development and evolution of the vertebrate brain and sensory systems has influenced patterns of morphological, behavioral, and taxonomic diversity. To understand these relationships, my focus centers on the avian lineage because of their large, complex brain, which is increasingly recognized as an important analog to the more intensively studied system of mammals.

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

2019 – present Committee member, David S. Olton Behavioral Biology Program Committee, Johns Hopkins University

2022 – present Co-Director of Undergraduate Studies, Behavioral Biology Program, Johns Hopkins University

Editorial Activities

Editorial Board appointments

2021 – present Associate Editor, Journal of Vertebrate Paleontology

Journal peer review activities

2007 – present Acta Palaeontologica Polonica, Anatomical Record, BMC Evolutionary Biology, Biology Letters, Bulletin of the Peabody Museum of Natural History (Yale University), Cladistics, Cretaceous Research, Current Biology, Evolution, iScience, Journal of Anatomy, Journal of Evolutionary Biology, Journal of Experimental Zoology B, Journal of Vertebrate Paleontology, Nature, Nature Communications, Nature: Scientific Reports, PLoS One, Paleobiology, Proceedings of the National Academy of Sciences USA, Proceedings of the Royal Society B, Royal Society Open Science, Zoologica Journal of the Linnean Society, Zootaxa

Other peer review activities

2016 Pre-proposal Panel Reviewer; National Science Foundation, Division of Environmental Biology

2019 Ad hoc Reviewer; National Science Foundation, Earth Sciences Division, Postdoctoral Fellowship Proposal

2020 Book Proposal Reviewer; Springer.

2021 Book Chapter Reviewer; "Paleoneurology of Amniotes: New Directions in the Study of Fossil Endocasts", Springer.

2021 Book Chapter Reviewer; "The Dinosauria, 3rd Edition", Academic Press.

Professional Societies

2001 – present Member, Society of Vertebrate Paleontology

2013 – present Member, Society for Integrative and Comparative Biology

2018 – present JB Johnston Club for Evolutionary Neuroscience

Session Chair

National

2013 Session Moderator, 73rd Annual Meeting of the Society of Vertebrate Paleontology, Los Angeles, CA
2020 Co-organizer and moderator of symposium, "Frontiers in Paleoneurology and Neurosensory Evolution" at 80th Annual Meeting of the Society of Vertebrate Paleontology, Virtual.
2022 Co-organizer and moderator of symposium, "Beyond Description: Realizing the Potential of Endocasts in Modern Neuroscience", Annual Meeting of the American Association of Anatomy; Philadelphia, PA.

RECOGNITION

Awards, Honors

1997 – 1998 W. Kenley Clark Memorial Endowed Presidential Scholarship, Dept. of Geological Sciences, University of Texas at Austin
1998 – 1999 Banks Scholarship, Dept. of Geological Sciences, University of Texas at Austin
1999 Carroll C. Miller Endowed Presidential Scholarship, Dept. of Geological Sciences, University of Texas at Austin
1999 Phillips Petroleum Company Field Camp Scholarship, Dept. of Geological Sciences, University of Texas at Austin
1999 Burlington Resources Field Camp Scholarship, Dept. of Geological Sciences, University of Texas at Austin
1999 – 2000 Karl Frederick Hagemeier Jr. Memorial Endowed Presidential Scholarship, Dept. of Geological Sciences, University of Texas at Austin
2001 – 2002 Whitney Endowed Presidential Scholarship, Dept. of Geological Sciences, University of Texas at Austin
2001 Professional Development Grant, Jackson School of Geosciences, University of Texas at Austin
2002 Professional Development Grant, Jackson School of Geosciences, University of Texas at Austin
2003 Professional Development Grant, Jackson School of Geosciences, University of Texas at Austin
2005 – 2011 American Museum of Natural History Graduate Student Fellowship
2009 Most Innovative Research Award, 38th Annual Scientific Assembly, California/American College of Emergency Physicians. J. Tonna, A. Balanoff, and M. Lewin. Cross-Disciplinary Innovation: A Novel Method for Partitioning CT Scan Data to Characterize Acute Spinal Cord Injuries Using Techniques Developed in Field of Paleontology.
2021 Outstanding Research Paper in the Journal of Anatomy for 2020 Runner up; American Association for Anatomy
2020 – present Research Associate, Division of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington, DC.
2011 – present Research Associate, Division of Paleontology, American Museum of Natural History, New York, NY
2021 Undergraduate research mentee, Yoko Yamashita, won the David S. Olton Behavioral Biology Research Grant for research conducted on avian neuroanatomy
2022 Undergraduate research mentee, Molly Ma, won the Curt P. Richter Award for Outstanding Achievement in Behavioral Biology

Invited Talks

JHU

2017 "Unraveling the Deep History of Avian Neuroanatomy." Invited talk in the Dept. of Psychological and Brain Sciences, Johns Hopkins University.
2020 "Avian Neuroanatomy". Behavioral Biology Program, Johns Hopkins University.
2022 "Meet the Professor Night", Behavioral Biology Program, Johns Hopkins University
2022 Guest Lecturer for prospective undergraduates, Undergraduate Admissions, Johns Hopkins University
2022 Guest Lecturer for admitted undergraduates, Undergraduate Admissions, Johns Hopkins University

National

2002 "Digital extraction of an embryonic skeleton of the extinct elephant bird (*Aepyornis*)." Austin Paleontological Society, Austin, TX.
2007 "Application of computed tomography (CT) in paleontology", New York Paleontological Society, New York, NY.
2013 "Evolutionary origin of the avian brain", Special seminar for Arhat Abzhanov lab, Harvard University.
2014 "Which came first: the bird or the bird brain?" SciCafe, AMNH, New York, NY.
2015 "Unscrambling the egg: insights into the developmental history of the extinct Elephant Bird (*Aepyornis*)." Madagascar symposium at the Bruce Museum, Greenwich, CT.

2018 "The Brain to Endocast Relationship Along the Avian Stem: Neuroanatomy in Deep Time." J. B. Johnston Club's Annual Karger Workshop in Evolutionary Neuroscience, College Park, MD.
2018 "Unraveling the Deep History of Avian Neuroanatomy." Dept. of Anatomical Sciences and Neurobiology, Louisville University.
2019 "Avian Neuroanatomy through Deep Time." Neuroscience Night, American Museum of Natural History, New York, NY.

International (4)

2013 "Paleontology and the evolution of anatomical form", invited seminar, Kaunas Technological University, Kaunas, Lithuania.
2014 Invited presenter in *Archaeopteryx* symposium at 2014 Society of Vertebrate Paleontology meeting featured in *Nature* (http://www.nature.com/news/rival-species-recast-significance-of-first-bird-1.16469).
2014 "Origins of inner ear morphology of batoid sharks (Elasmobranchii) as discerned from computed tomography", invited symposium speaker, 4e Colloque Cuvier sur la paléontologie des vertébrés. Musée de Cuvier, Montébeliard, France.

OTHER PROFESSIONAL ACCOMPLISHMENTS

Educational Outreach

2002 Volunteer, Explore UT (public exhibits), The University of Texas at Austin.
2006 Consultant on "Mythic Creatures" exhibit, AMNH.
2007 Volunteer, Lamont-Doherty Earth Observatory (public exhibits), Department of Earth and Environmental Sciences, Columbia University.
2010 Consultant on "The World's Largest Dinosaurs" exhibit, AMNH.
2011 Led roundtable discussion at educator's evening for "The World's Largest Dinosaurs" exhibit, AMNH.
2011 Society of Vertebrate Paleontology Student Roundtable discussion leader. "Advice on Getting a Postdoc".
2012 Invited speaker, "Behind the Scenes: Fossil Sharks", American Museum of Natural History, New York, NY.
2012 Invited speaker for "Behind the Scenes: Pterosaurs", American Museum of Natural History, New York, NY.
2013 Society of Vertebrate Paleontology Student Roundtable discussion leader. "Advice on Getting a Postdoc".
2014 Invited speaker, "Evolutionary origins of the bird brain", AMNH Youth Program for 9-10th graders. AMNH, New York.
2014 "Which came first: the bird or the bird brain?" SciCafe, AMNH, New York, NY.
2015 Invited speaker at BridgeUp, American Museum of Natural History educational outreach program that is designed to teach computer programming skills to high school girls in New York City.
2015 Invited lecture on the bird brain, Introduction to Ornithology course. City College, CUNY, New York.
2015 Research on *Aepyornis* featured in "Madagascar" exhibit at the Bruce Museum, Greenwich, CT.
2016 Science featured in the traveling exhibit, "Dinosaurs Among Us," originating at the American Museum of Natural History.
2019 "Avian Neuroanatomy through Deep Time." Neuroscience Night, American Museum of Natural History, New York, NY.
2022 Prepared outreach materials for K-12 teachers "Seminars on Science: Dinosaurs: Neurosensory Evolution" through the American Museum of Natural History.

Paleontological Fieldwork

1998 University of Texas at Austin fieldwork to collect Cretaceous vertebrate fossils in the Aguja Formation, Big Bend National Park, Texas.
2000 University of Texas at Austin fieldwork to collect Jurassic vertebrate fossils in the Kayenta Formation, Arizona.
2004 University of Texas at Austin fieldwork to collect Miocene vertebrate fossils, Black Rock Desert, Nevada.
2001, 2005 University of Texas at Austin fieldwork to collect Late Triassic vertebrate fossils, Chinle Formation, Arizona.
2006 – 2009 Paleontological fieldwork with Drs. Mark Norell and Mike Novacek, Early and Late Cretaceous, Gobi Desert, Mongolia.
2012 Paleontological fieldwork with Drs. Mark Norell and Mike Novacek, Early and Late Cretaceous, Gobi Desert, Mongolia.
2013, 2014 Collaborative field work between AMNH and University of Bucharest in the Cretaceous of Romania with Drs. Mark Norell, Steve Brusatte, Zoltan Csiki, and Matyas Vremir.

2014 Collaborative field work with Universidad Autonoma de Madrid to collect Early Cretaceous vertebrate fossils at Las Hoyas, Spain

2014 – 2018 Helped organize and lead field crews to collect Late Jurassic small-bodied tetrapods from the Morrison Formation of western Colorado

Posters (17)

2001 **Balanoff AM.** Unscrambling the egg: Digital extraction of an elephant bird (*Aepyornis*) embryo. 61st Annual Meeting of the Society of Vertebrate Paleontology, Boseman, MT; Journal of Vertebrate Paleontology 21 (supplement to 3):32A.

2003 **Balanoff AM.** Skeletal development of the vertebral column in *Ascaphus truei* (Amphibia: Anura). 63th Annual Meeting of the Society of Vertebrate Paleontology, St. Paul, MN; Journal of Vertebrate Paleontology 23 (supplement to 3):32A.

2005 **Balanoff AM**, Ikejiri T, Bever GS. The endocranial morphology of diplodocid sauropods. 65th Annual Meeting of the Society of Vertebrate Paleontology, Mesa, AZ; Journal of Vertebrate Paleontology 25 (supplement to 3):33A-34A.

2009 **Balanoff AM**, Norell MA. Adult morphology and variation within the oviraptorid *Khaan mckennai* (Theropoda: Oviraptorosauria). 69th Annual Meeting of the Society of Vertebrate Paleontology, Bristol, England; Journal of Vertebrate Paleontology 29 (supplement to 3): 57A.

2009 Tonna JE, **Balanoff AM,** Lewin MR. Cross-disciplinary innovation: a novel method for partitioning CT scan data to characterize acute spinal cord injuries using techniques developed in the field of paleontology. 38th Annual Scientific Assembly, California/American College of Emergency Physicians.

2011 **Balanoff AM**, Ksepka DT. 2011. Evolution of the brain and sensory organs in Sphenisciformes: new data from the stem penguin *Paraptenodytes antarcticus*. 71st Annual Meeting of the Society of Vertebrate Paleontology, Las Vegas, NV; Journal of Vertebrate Paleontology 31 (supplement to 3):66.

2012 Early C, Sclafani M, **Balanoff AM**, Ksepka DT. Comparative neuroanatomy of fossil and living waterbirds. 72nd Annual Meeting of the Society of Vertebrate Paleontology, Raleigh, NC; Journal of Vertebrate Paleontology 32(supplement to 3):89.

2016 Wang S, Stiegler J, Amiot R, Clark JM, **Balanoff AM**, Xu X. Cranial ontogenetic changes in the Late Jurassic Chinese ceratosaur *Limusaurus inextricabilis*. Society of Vertebrate Paleontology, 76th Annual Meeting Abstracts 2016: 246.

2017 Salerno M, Ferrer E, Wei S, **Balanoff A**, Vaska P. Development of Quantitative Approaches for Behavioral Neuroimaging in Birds. 2017 IEEE Nuclear Science Symposium and Medical Imaging Conference. Atlanta, GA.

2017 Salerno M, Ferrer E, Wei S, Li X, Gao W, **Balanoff A**, Vaska P. Behavioral neuroimaging in birds. 2017 World Molecular Imaging Congress. Philadelphia, PA.

2018 Hogan A, Watanabe A, **Balanoff AM**, Bever GS. Differential growth in the telencephalon of the developing chick—the olfactory bulb in ontogeny and phylogeny. Experimental Biology Annual Meeting. San Diego, CA.

2018 Hogan AV, Watanabe A, **Balanoff AM**, Bever GS. Evolutionary patterns in the olfactory system of developing chicks. Society of Vertebrate Paleontology Annual Meeting Abstract Volume. Albuquerque, NM. 2018: 148.

2019 Carter M, Hogan AVC, **Balanoff AM**, Bever GS. Functional correlates of floccular size in Pan-Aves. Society for Integrative and Comparative Biology Annual Meeting. Tampa, FL.

2019 Neenan JM, Benson RB, Sipla JS, Georgi JA, Walsh SA, **Balanoff AM**, Norell MA, Xu X, Choiniere JN. Convergent sensory ecologies between Alvarezsauroidea and extant tytonid owls. Society of Vertebrate Paleontology Annual Meeting Abstract Volume. Brisbane, Queensland, Australia.

2023 Ma M, Huang EJ, Bever G, **Balanoff A**. Comparative Shape Analysis of the Hyoid in Vocal Learning vs. Non-vocal Learning Birds. Society for Integrative and Comparative Biology Annual Meeting, Austin, TX.

Oral/Podium Presentations (40)

2002 **Balanoff AM**, Rowe T. Osteological description of an elephant bird, *Aepyornis*, embryo using computed-tomography and rapid prototyping, with a discussion of growth rates in *Aepyornis*. 62rd Annual Meeting of the Society of Vertebrate Paleontology, Norman, OK; Journal of Vertebrate Paleontology 22 (supplement to 3):35A.

2003 Bever GS, **Balanoff AM**. Digital preparation of an emydid turtle from the Miocene (Clarendonian) of Nebraska with a review of the fossil hinged emydids of Kansas and Nebraska. Abstracts of Papers Presented at the 135th Annual Meeting of the Kansas Academy of Science Meeting, Pittsburg, Kansas. [presented by Bever]

2004 **Balanoff AM**, Rowe T. The cranial morphology of *Aepyornis* (Ratitae: Aepyornithidae) over ontogeny. 64th Annual Meeting of the Society of Vertebrate Paleontology, Denver, CO; Journal of Vertebrate Paleontology 24 (supplement to 3):36A.

2006 **Balanoff AM**, Norell M. An embryonic ceratopsian from the Early Cretaceous of Mongolia. 66th Annual Meeting of the Society of Vertebrate Paleontology, Ottawa, Canada; Journal of Vertebrate Paleontology 26 (supplement to 3):38A.

2007 **Balanoff AM**, Xu X, Matsufune Y, Kobayashi Y, Norell M. Endocranial anatomy of a primitive oviraptorosaur, *Incisivosaurus gauthieri* (Theropoda: Dinosauria). 67th Annual Meeting of the Society of Vertebrate Paleontology, Austin, TX; Journal of Vertebrate Paleontology 27 (supplement to 3):43A.

2008 **Balanoff AM**, Bever GS, Rowe T, Norell MA. "The endocranial morphology of oviraptorosaurs and a reinterpretation of their encephalization quotients." 68th Annual Meeting of the Society of Vertebrate Paleontology, Cleveland, OH; J. Vertebr. Paleontol. 28 (suppl. to 3): 47A.

2012 **Balanoff AM**, Bever GS, Rowe T, Norell MA. "The origin of the avian brain based on a volumetric analysis of endocranial evolution in Coelurosauria." 72nd Annual Meeting of the Society of Vertebrate Paleontology, Raleigh, NC; J. Vertebr. Paleontol. 32(suppl. to 3):35A.

2013 **Balanoff AM**, Bever GS, Norell MA. The relationships of oviraptorosaur dinosaurs and endocranial evolution along a morphologically bizarre lineage. 73rd Annual Meeting of the Society of Vertebrate Paleontology, Los Angeles, CA; Journal of Vertebrate Paleontology (supplement to 3):81.

2014 **Balanoff, AM**. Deep history of the avian brain. Society of Integrative and Comparative Biology Abstract volume 2014:18. Austin, TX.

2014 Gold M, **Balanoff AM**, Watanabe A, Norell M. Endocast shape differences in Coelurosauria (Dinosauria: Theropoda) reflect phylogeny and locomotor mode across the evolution of flight. Society of Vertebrate Paleontology, 74th Annual Meeting Abstracts 2014:140. [presented by Gold]

2014 **Balanoff AM**. *Archaeopteryx* and the evolution of the paravian brain. 74th Annual Meeting of the Society of Vertebrate Paleontology, Berlin, Germany.

2015 **Balanoff AM**, Smaers J, Turner AH. Mosaic evolution and the influence of flight on neuroanatomical variation within theropods. 75th Annual Meeting of the Society of Vertebrate Paleontology, Dallas, TX.

2016 Gold ML, Norell M, Smaers JB, **Balanoff AM**. Changes in brain shape across the theropod-bird transition. 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT. [presented by Gold]

2016 Fabbri M, Pritchard A, Hanson M, Mongiardino NK, Hoffman E, **Balanoff A**, Bever G, Norell MA, Abzhanov A, Bhullar BAS. Skull roof and brain interrelationship: macroevolutionary and developmental perspectives. 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT. [presented by Fabbri]

2016 Brusatte S, Muir A, Averianov A, **Balanoff A**, Bever GS, Carr TD, Kundrat N, Sues HD, Williamson TE, Xu X. Brains before brawn: neurosensory evolution in tyrannosauroid dinosaurs. 76th Annual Meeting of the Society of Vertebrate Paleontology, Salt Lake City, UT. [presented by Brusatte]

2017 Ferrer E, Vaska P, Salerno M, Ouellette D, Wei S, Bever G, Gignac P, **Balanoff A**. Combination of diffusible iodine-based contrast-enhanced computed tomography specimens and measuring biodistribution and kinetics of 8F-FDG in extant birds: implications on the evolution of the avian brain. Tomography for Scientific Advancement Annual Meeting. Austin, TX. [presented by Ferrer]

2018 Ferrer EA, Salerno M, Wei S, Gao W, Li X, Vaska P, **Balanoff AM**. Unraveling the evolutionary history of the avian brain through behavioral neuroimaging. 76th Annual Meeting of the Society of Vertebrate Paleontology, Albuquerque, NM. [presented by Ferrer]

2018 Ksepka D, **Balanoff A**, Smith N, Smaers J. Evolution of avian brain size: combining fossil and modern evidence. 76th Annual Meeting of the Society of Vertebrate Paleontology, Albuquerque, NM. [presented by Ksepka]

2020 Watanabe A, Bedell M, Felice R, **Balanoff A**. Getting inside your head: a unified analysis of brain and skull evolution. 79th Annual Meeting of the Society of Vertebrate Paleontology, held remotely. [presented by Watanabe]

2020 Ferrer EA, Salerno M, Wei S, Vaska P, **Balanoff A**. Unraveling the evolutionary history of the avian brain through behavioral neuroimaging and diffusible iodine-based contrast-enhanced computed tomography. 79th Annual Meeting of the Society of Vertebrate Paleontology, held remotely. [presented by Ferrer]

2020 Gold ML, Smaers JB, Norell M, **Balanoff A**. Brain reorganization at the origin of crown birds. 79th Annual Meeting of the Society of Vertebrate Paleontology, held remotely. [presented by Gold]

2020 Hogan A, **Balanoff A**, Bever GS. Phylogenetic scaling of the olfactory apparatus in crown Aves. 79th Annual Meeting of the Society of Vertebrate Paleontology, held remotely. [presented by Hogan]