

Justin A. Ledogar

Curriculum vitae

Department of Health Sciences
East Tennessee State University
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EDUCATION

- 2015 **Ph.D.**, Biological Anthropology, University at Albany
2009 **M.A.**, Biological Anthropology, Stony Brook University
2006 **B.A. magna cum laude**, Anthropology (Honors), Stony Brook University

PROFESSIONAL APPOINTMENTS

- 2022-present **Assistant Professor**, Department of Health Sciences, East Tennessee State University
2018-2022 **Assistant Research Professor**, Department of Evolutionary Anthropology, Duke University
2015-2018 **Postdoctoral Research Fellow**, The Function, Evolution, and Anatomy Research Lab, Zoology Division, University of New England

SUMMARY OF PUBLICATIONS / CITATION STATISTICS

- 26 published/in press/accepted peer-reviewed journal articles
19 published abstracts
879 citations in the Google Scholar database
h-index = 15 (i.e., 15 articles cited 15 or more times; data from Google Scholar)
*i*10-index = 21 (i.e., 21 articles cited 10 or more times; data from Google Scholar)

PUBLISHED MANUSCRIPTS (* includes a graduate student advisee or mentee)

- 2022 **Ledogar JA**, Senck S, Villmoare BA, Smith AL, Weber GW, Richmond BG, Dechow PC, Ross CF, Grosse IR, Wright BW, Wang Q, Byron C, Benazzi S, Carlson KJ, Carlson KB, Pryor McIntosh LC, van Casteren A, Strait DSS. Mechanical compensation in the evolution of the early hominin feeding apparatus. *Proceedings of the Royal Society B* 289: 20220711.
- 2021 * Cook RW, Vazzana A, Sorrentino R, Benazzi S, Smith AL, Strait DS, **Ledogar JA**. The cranial biomechanics and feeding performance of *Homo floresiensis*. *Interface Focus* 11: 20200083.
- 2021 JM Martin, AB Leece, S Neubauer, SE Baker, CS Mongle, G Boschian, Schwartz GT, Smith AL, **Ledogar JA**, Strait DS, Herries AIR. Drimolen cranium DNH 155 documents microevolution in an early hominin species. *Nature Ecology & Evolution* 5: 38–45.
- 2021 van Heteren AH, Wroe S, Tsang LR, Mitchell DR, Ross P, **Ledogar JA**, Attard MRG, Sustaita D, Clausen P, Scofield RP, Sansalone G. New Zealand's extinct giant raptor (*Hieraaetus moorei*) killed like an eagle, ate like a condor. *Proceedings of the Royal Society B* 288: 20211913.
- 2020 Sansalone G, Allen K, **Ledogar JA**, Ledogar S, Mitchell D, Profico A, Castiglione S, Melchionna M, Serio A, Raia P, Wroe S. Variation in the strength of allometry drives rates of evolution in primate brain shape. *Proceedings of the Royal Society B* 287: 20200807.

- 2020 Valenta K, Daegling DJ, Nevo O, **Ledogar J**, Sarkar D, Kalbitzer U, Bortolamiol S, Omeja P, Chapman CA, Ayasse M, Kay R, Williams B. Fruit selectivity in anthropoid primates: Size matters. *International Journal of Primatology* 41: 525-537.
- 2019 Neaux D, Wroe S, **Ledogar JA**, Ledogar SH, Sansalone G. Morphological integration affects the evolution of midline cranial base, lateral basicranium, and face across primates. *American J of Physical Anthropology* 170: 37-47.
- 2019 * Tsang LR, Wilson LAB, **Ledogar J**, Wroe S, Attard M, Sansalone G. Raptor talon shape and biomechanical performance are controlled by relative prey size but not by allometry. *Scientific Reports* 9: 7076.
- 2018 * **Ledogar JA**, Luk THY, Perry JMG, Neaux D, Wroe S. Biting mechanics and niche separation in a specialized clade of primate seed predators. *PLoS ONE* 3: e0190689.
- 2018 Wroe S, Parr WCH, **Ledogar JA**, Bourke J, Evans SP, Fiorenza L, Benazzi S, Hublin JJ, Stringer C, Kullmer O, Curry M, Rae T, Yokley T. Computer simulations show that Neanderthal facial morphology represents adaptation to cold and high energy demands, but not heavy biting. *Proceedings of the Royal Society B* 285: 20180085.
- 2018 * Bicknell RDC, **Ledogar JA**, Wroe S, Gutzler BC, Watson WH, Paterson JR. Computational biomechanical analyses demonstrate similar shell-crushing abilities in modern and ancient arthropods. *Proceedings of the Royal Society B* 285: 20181935.
- 2018 * Mitchell DR, Sherratt E, **Ledogar JA**, Wroe SW. The biomechanics of foraging determines face length among kangaroos and their relatives. *Proceedings of the Royal Society B* 285: 20180845.
- 2018 * Mitchell DR, Sherratt E, Sansalone G, **Ledogar JA**, Flavel RJ, Wroe S. Feeding biomechanics influences craniofacial morphology at the subspecies scale among Australian pademelons (Macropodidae: *Thylogale*). *Journal of Mammalian Evolution* 27, 199–209.
- 2018 Neaux D, Sansalone G, **Ledogar JA**, Ledogar SH, Wroe S, Luk T. Basicranium and face: assessing the impact of morphological integration on primate evolution. *J Hum Evol* 118: 43-55.
- 2017 Neaux D, Bienvenu T, Guy F, Daver G, Sansalone G, **Ledogar JA**, Rae TC, Wroe S, Brunet M. Relationship between foramen magnum position and locomotion in extant and extinct hominoids. *J of Human Evolution* 113: 1-9.
- 2017 **Ledogar JA**, Benazzi S, Smith AL, Weber GW, Carlson KB, Dechow PC, Grosse IR, Ross CF, Richmond BG, Wright BW, Wang Q, Byron C, Carlson KJ, de Ruiter DJ, Pryor LC, Strait DS. The biomechanics of bony facial “buttresses” in South African australopiths: an experimental study using finite element analysis. *Anatomical Record* 300: 171-195.
- 2016 Prado FB, Freire AR, Rossi AC, **Ledogar JA**, Smith AL, Dechow PC, Strait DS, Voigt T, Ross CF. Review of *in vivo* bone strain studies and finite element models of the zygomatic complex in humans and nonhuman primates: implications for clinical research and practice. *Anat Record* 299: 1753-1778.

- 2016 Pryor McIntosh C, Strait DS, Ross CF, Wang Q, Smith AL, **Ledogar JA**, Opperman L, Dechow PC. Internal bone architecture in the zygoma of human and *Pan*. *Anatomical Record* 299: 1704-1717.
- 2016 **Ledogar JA**, Dechow PC, Wang Q, Gharpure PH, Gordon AD, Baab KL, Smith AL, Weber GW, Grosse IR, Ross CF, Richmond BG, Wright BW, Byron C, Wroe S, Strait DS. Human feeding biomechanics: performance, variation, and functional constraints. *PeerJ* 4: e2242.
- 2016 **Ledogar JA**, Smith AL, Benazzi S, Weber GW, Spencer MA, Carlson KB, McNulty KP, Dechow PC, Grosse IR, Ross CF, Richmond BG, Wright BW, Wang Q, Byron C, Slice DE, Carlson KJ, de Ruiter DJ, Berger LR, Tamvada K, Pryor LC, Strait DS. Mechanical evidence that *Australopithecus sediba* was limited in its ability to eat hard foods. *Nature Communications* 7: 10596.
- 2015 Smith AL, Benazzi S, **Ledogar JA**, Tamvada K, Pryor Smith LC, Weber GW, Spencer MA, Dechow PC, Grosse IR, Ross CF, Richmond BG, Wright BW, Wang Q, Byron C, Slice DE, Strait DS. Biomechanical implications of intraspecific shape variation in chimpanzee crania: moving towards an integration of geometric morphometrics and finite element analysis. *Anatomical Record* 298: 122-144.
- 2015 Smith AL, Benazzi S, **Ledogar JA**, Tamvada K, Pryor Smith LC, Weber GW, Spencer MA, Lucas PW, Michael S, Shekeban A, Al-Fadhalah K, Almusallam AS, Dechow PC, Grosse IR, Ross CF, Madden RH, Richmond BG, Wright BW, Wang Q, Byron C, Slice DE, Wood S, Dzialo C, Berthaume MA, van Casteren A, Strait DS. The feeding biomechanics and dietary ecology of *Paranthropus boisei*. *Anatomical Record* 298: 145-167.
- 2014 Winchester JM, Boyer DM, St. Clair EM, Gosselin-Ildari AD, Cooke SE, **Ledogar JA**. Dental topography of platyrrhines and prosimians: convergence and contrasts. *American Journal of Physical Anthropology* 153: 29-44.
- 2013 Strait DS, Constantino P, Lucas PW, Chalk J, Richmond BG, Spencer MA, Schrein C, Dechow PC, Ross CF, Grosse IR, Wright BW, Wood BA, Weber GW, Wang Q, Byron C, Slice D, Smith AL, Smith LC, Wood S, Berthaume M, Benazzi S, Dzialo C, Tamvada K, **Ledogar JA**. Diet and dietary adaptations in early hominins: the hard food perspective. *Am Journal of Physical Anthropology* 151: 339-355.
- 2013 **Ledogar JA**, Winchester JM, St. Clair EM, Boyer DM. Diet and dental topography in pitheciine seed predators. *American Journal of Physical Anthropology* 150: 107-121.
- 2011 Kamilar JM, **Ledogar JA**. Species co-occurrence patterns and dietary resource competition in primates. *American Journal of Physical Anthropology* 144: 131-139.

PUBLISHED ABSTRACTS OF CONFERENCE PROCEEDINGS

(† indicates poster, ‡ indicates podium talk, and § indicates invited poster symposium session including short talks and group discussion; * includes a graduate student advisee or mentee)

- 2022 Smith AL, Nicholas C, Bakhsh N, Patankar S, **Ledogar JA**, Moreno-Uribe L. Biomechanical consequences of alveolar cleft defect. *FASEB Journal* 36(S1).
- 2021 * Cook RW, Vazzana A, Sorrentino R, Benazzi S, Smith AL, Strait DS, **Ledogar JA**. Evaluating the craniofacial feeding biomechanics in *Homo floresiensis* using the finite element method. *American Journal of Physical Anthropology* 174:20-21.
- 2019 Sansalone G, **Ledogar J**, Ledogar S, Profico A, Raia P, Mitchell RD, Wroe S, Allen K. Think big: evolutionary allometry as a major factor in rates, trajectories and scaling of morphological evolution of the primate brain shape. *Journal of Morphology* 280: S212-S213.
- 2019 § **Ledogar JA**, Wright BW, Granatosky MC, Laird MF, Chalk-Wilayto J, Fogaça MD, van Casteren A, Ross CF, Strait DS. Food mechanical properties and dietary ecology in sympatric *Pithecia* and *Chiropotes* during a period of preferred food scarcity. *American Journal of Physical Anthropology* 168:139-140.
- 2019 Granatosky MC, Ross CF, Laird MF, van Casteren A, Chalk-Wilayto J, Fogaça MD, **Ledogar JA**, Strait DS, Wright BW, Usherwood JR. Work minimization and toppling concerns predict limb phasing in wild primates. *American Journal of Physical Anthropology* 168:90.
- 2015 † **Ledogar J**, Perry P. The biomechanics of partial symphyseal fusion in *Hapalemur* examined using finite element analysis. *FASEB Journal* 29:867.6.
- 2015 Ross C, Strait D, **Ledogar J**, Smith A, Villmoare B, Benazzi S, Weber G, Spencer M, Dechow P, Grosse I, Richmond B, Wright B, Wang Q, Byron C, Slice D, Carlson K, *et al.* Biomechanical studies of the zygoma: a review of in vivo and FEM studies of the lateral orbital wall and zygomatic arch. *FASEB Journal* 29:212.4.
- 2015 † **Ledogar JA**, Benazzi S, Smith AL, Weber GW, Spencer MA, Carlson KB, Dechow PC, Grosse IR, Ross CF, Richmond BG, Wright BW, Wang Q, Byron C, Slice DE, Carlson KJ, de Ruiter DJ, Berger LR, *et al.* Bony facial buttressing in South African australopiths: a finite element analysis. *American Journal of Physical Anthropology* S60:199-200.
- 2015 Strait DS, Ross CF, **Ledogar JA**, Smith AL, Villmoare B, Benazzi S, Weber GW, Spencer MA, Dechow PC, Grosse IR, Richmond BR, Wright BW, Wang Q, Byron C, Slice DE, Carlson KJ, de Ruiter DJ, Berger LR, *et al.* Principal strain orientations during biting in the faces of chimpanzees and australopiths. *Am Journal of Physical Anthropology* S60:298.
- 2015 Moore JWR, Norconk MA, Wright BW, **Ledogar JA**. Tropical lianas: correlations with habitat type and primate use at Brownsberg Nature Park. *American Journal of Physical Anthropology* S60:229.

- 2014 ‡ **Ledogar JA**, Smith AL, Benazzi S, Weber GW, Spencer M, Carlson KB, McNulty KP, Dechow PC, Grosse IR, Ross CF, Richmond BG, Wright BW, Wang Q, Byron C, Slice DE, Carlson KJ, de Ruiter DJ, Berger LR, *et al.* Constraints on feeding biomechanics in *Australopithecus sediba*. *American Journal of Physical Anthropology* S58:166-167.
- 2014 Villmoare BA, **Ledogar JA**, Smith A, Strait D, Senck S, Weber G, Benazzi S, Spencer M, Dechow P, Grosse I, Ross C, Wright B, Wang Q, Byron B, Slice D, Richmond BG. Facial biomechanics of *Australopithecus afarensis* based on AL444-2. *American Journal of Physical Anthropology* S58:262.
- 2014 * Strait DS, Parisi D, Sohnen S, Gundel A, Smith AL, Tamvada K, **Ledogar JA**, Ross CF, Ryan TM. Biomechanics of the postorbital bar of *Eulemur fulvus* examined using finite element analysis. *American Journal of Physical Anthropology* S58:247.
- 2014 Norconk MA, Wright BW, Moore JW, **Ledogar JA**. Interpreting census variation in platyrrhines: decadal and seasonal repeated censuses at Brownsberg Nature Park, Suriname. *American Journal of Primatology* 76:55.
- 2014 Smith AL, Benazzi S, **Ledogar JA**, Smith L, Weber GW, Dechow PC, Grosse IR, Spencer MA, Wang Q, Strait DS. Considering the constrained lever model: feeding biomechanics of OH 5 assessed using finite element analysis. *FASEB JOURNAL* 27:520.6.
- 2013 † **Ledogar J**, Carlson K, Benazzi S, Weber G, Berger L, de Ruiter D, Smith A, Spencer M, Grosse I, Ross C, Dechow P, Richmond B, Lucas P, Wang Q, Byron C, Wright B, Slice D, Strait D. Feeding biomechanics of *Australopithecus sediba* examined using finite element analysis. *PaleoAnthropology*: A21.
- 2011 † **Ledogar JA**, Bunn JM, St. Clair EM, Boyer DM. Dental topographic analysis of pitheciine (*Pithecia*, *Chiropotes*, *Cacajao*) second mandibular molars. *Am Journal of Physical Anthropology* S53:196.
- 2010 † **Ledogar JA**. Enlarged jaw proportions: load magnitude or load frequency? *Am Journal of Physical Anthropology* S50:153.
- 2009 † **Ledogar JA**. Postcanine loading and relative dental arcade width in pitheciine primates. *Am Journal of Physical Anthropology* S48:173.
- 2008 † **Ledogar JA**, Grine FE. Temporally related morphological trends in East African “robust” australopithecines. *American Journal of Physical Anthropology* S46:138-139.

GRANTS AND ASSISTANTSHIPS

- 2021 **Research Grant** (\$16,922), The Leakey Foundation (Grant # 40463): *Food mechanical properties and feeding biomechanics in sympatric pitheciines from Brownsberg Nature Park, Suriname* (PI: Ledogar)

- 2019 **Professional Development Grant** (\$5,000), Duke University
- 2017 **Professional Development Grant** (\$5,000), American Association of Biological Anthropology
- 2015 **Professional Development Grant** (\$455), University at Albany GSEU
- 2012-2015 **Teaching Assistantship** (\$14,500/yr), University at Albany
- 2014 **Professional Development Grant** (\$200), University at Albany
- 2013 **Dissertation Research Fellowship** (\$1,000), University at Albany
- 2010-2012 **Research Assistantship** (\$16,000/yr), University at Albany
- 2011 **Professional Development Grant** (\$300), University at Albany
- 2010 **Student Assistantship** (\$6,000/yr), University at Albany
- 2010 **Professional Development Grant** (\$300), University at Albany
- 2009 **Professional Development Grant** (\$275), Stony Brook University
- 2009 **Research Assistance** (\$250), Stony Brook University
- 2008-2010 **Graduate Assistantship** (\$15,500/yr), Turkana Basin Institute

AWARDS AND HONORS

- 2014 **William S. Pollitzer Award**, American Association of Physical Anthropologists
- 2009 **Norman Creel Prize**, Competition for Outstanding Student Research in Anatomical Sciences, Stony Brook University

INVITED TALKS

- 2019 **Virtual biomechanics and primate craniofacial evolution.** Center for Functional Anatomy and Evolution Seminar Series, Johns Hopkins University (5/11). Invited by Dr. Siobhán Cooke.
- 2018 **Chew on this: The evolution of human feeding biomechanics.** Biological Anthropology Research (BAR) Seminar Series, Australian National University (5/22). Invited by Dr. Justyna Miskiewicz.
- 2017 **Feeding biomechanics and human craniofacial evolution.** Royal Children's Hospital Melbourne (11/10). Invited by Dr Andrew Heggie.
- 2016 **Something to chew on: Diet and craniofacial evolution in humans and our fossil ancestors.** Centre for Archaeological Science, University of Wollongong (10/1). Invited by Dr. Richard Fullagar.

DEPARTMENTAL TALKS

- 2022 **Virtual biomechanics and human craniofacial evolution.** Departments of Biological Sciences and Health Sciences Seminar Series, East Tennessee State University.
- 2018 **Virtual biomechanics and primate craniofacial evolution.** Evolutionary Anthropology Talk Series (EATS), Duke University.
- 2016 **Hominin feeding biomechanics and human craniofacial evolution.** University of New England, Life, Earth & Environment Series.
- 2013 **The feeding biomechanics of *Australopithecus sediba*.** University at Albany Anthropology Graduate Student Research Symposium.
- 2012 **Feeding biomechanics and symphyseal fusion in *Haplemur*.** University at Albany Anthropology Graduate Student Symposium.

WORKSHOPS FACILITATED

2016 **Virtual reconstruction & computational biomechanics workshop.** (October 20-21). Monash University. Co-run by Drs. Stephen Wroe, Stefano Benazzi, and Philip Clausen.

TEACHING EXPERIENCE

Instructor of record (* includes lab; § graduate level, dissection-based)

East Tennessee State University

*Human Anatomy** (Spring 2022)

Duke University

*Primate Anatomy** (Fall 2019, 2020)

*Human Evolution** (Spring 2019, 2020)

Human Evolutionary Physiology (Spring 2019-21; Summer 2020-22)

*Introduction to Evolutionary Anthropology** (Fall 2018)

University of New England

*Principles of Zoology** (Trimester 2, 2016)

Marist College

Introduction to Physical Anthropology (Fall 2014, Spring 2015)

University at Albany

*Human Anatomy and Physiology II** (Summer 2013, 2014)

*Introduction to Human Evolution** (Summer 2011, 2012)

Teaching Assistant or Lab Instructor (*)

University at Albany

*Human Anatomy and Physiology II** (Spring 2013, 2015)

Human Population Biology (Fall 2014)

Introduction to the Primates (Fall 2013, Spring 2014)

*Human Anatomy and Physiology I** (Fall 2012)

SUNY Downstate Medical School

Human Anatomy for Occupational Therapists§* (Summer 2009)

GRADUATE STUDENTS ADVISED

2019-present **Rebecca Cook**, Duke University (PhD committee member)

Thesis topic: Biomechanics of the *Homo erectus* pelvis

2015-2019 **Hui Ying Luk**, University of New England (PhD committee member)

Thesis topic: Primate craniofacial variation and feeding mechanics

DEPARTMENTAL SERVICE

2018-present **Member**, Duke Evolutionary Anthropology Collections Committee

2021 **Member**, Duke Faculty Focus Group on Diversity, Equity, and Inclusion

2020 **Committee Chair**, Mosse' Family Foundation Student Travel Award selection committee, Duke University

RELEVANT PROFESSIONAL EXPERIENCE

2010 **Academic Advisor**, Human Biology, University at Albany

2005-2007 **Editorial Assistant**, *Evolutionary Anthropology* (academic journal)

2005 **Editorial Assistant**, *The Human Evolution Source Book* (2nd edition)

FIELD EXPERIENCE

- 2018-2022 **Brownsberg Field Site**, Suriname. Collection of primate food mechanical data.
- 2013 **Brownsberg Field Site**, Brokopondo District, Suriname. Census of primate species to assess impact of nearby illegal gold mining. Project directed by Dr. Marilyn Norconk.
- 2006 **Koobi Fora Research Project**, Turkana Basin, Kenya. Provided field assistance in the excavation and identification of Plio-Pleistocene fauna. Project directed by Drs. Meave Leakey and Louise Leakey.

MEDIA COVERAGE AND PUBLIC OUTREACH

- 2017 Helped organize and participate in exhibit on Australian archaeology and material culture at Dharriwaa Open Day, Narran Lakes Reserve (4/7/17).
- 2017 Interviewed about *Gigantopithecus* dietary adaptations for documentary TV series *Megafauna: From Past to Present* (French Connection Films).
- 2016 Interviewed about work on modern human feeding mechanics for *United Press International*, (“Powerful, efficient human bite is an accident of evolution: Study” (8/8/16).
- 2016 Interviewed about our *Australopithecus sediba* research for *The Guardian*, “Biting off more than it can chew: human ancestor struggled to eat hard foods,” and *The Independent*, “Early human ancestor jaws were not built for hard-food diet, say Australian scientists” (2/9/16).

SERVICE TO THE FIELD

Peer reviewer for *Journal of Human Evolution*, *Evolutionary Anthropology*, *International Journal of Primatology*, *American Journal of Primatology*, *PLOS ONE*, *PeerJ*, *Journal of Comparative Human Biology*, *Anatomical Record*, and *Science Advances*.

PROFESSIONAL MEMBERSHIPS

American Association of Physical Anthropologists
American Association for Anatomists
East African Society for Palaeoanthropology and Palaeontology
Paleoanthropology Society