

Zachary S. Klukkert

Curriculum Vitae

Foundational Sciences Division
Central Michigan University College of Medicine
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EDUCATION

- Ph.D. Physical Anthropology, City University of New York Graduate Center, 2019.
M.A. Physical Anthropology, University of Arkansas, 2008.
B.S. Biological Anthropology, University of New Mexico, 2004.

PROFESSIONAL APPOINTMENTS

- 2020-*pres.* Assistant Professor. Foundational Sciences – Anatomy, Central Michigan University College of Medicine.
2019-20 Research Postdoctoral Fellow. Center for Functional Anatomy and Evolution, Johns Hopkins University School of Medicine.
2014-15 Adjunct Assistant Professor. Department of Anthropology, Tulane University.

PUBLICATIONS

- 2016 Cooke SB*, Gladman JT, Halenar LB, **Klukkert ZS**, and Rosenberger AL. The paleobiology of the recently extinct platyrrhines of Brazil and the Caribbean. In Ruiz-Garcia M and Shostell JM (Eds.) *Phylogeny, Molecular Population Genetics, Evolutionary Biology and Conservation of the Neotropical Primates*. Nova Science Publishers, Inc., Hauppauge NY. p. 41-89. *Subsequent author names alphabetical.
- 2014 Tallman M*, Amenta N, Delson E, Frost SR, Ghosh D, **Klukkert ZS**, Morrow A, and Sawyer GJ. Evaluation of a new method of fossil retrodeformation by algorithmic symmetrization: crania of papionins (Primates, Cercopithecidae) as a test case. *PLoS ONE*, 9(7): e100833. *Subsequent author names alphabetical.
- 2013 Rosenberger AL, **Klukkert ZS**, Cooke SB, and Rímoli R. Rethinking *Antillothrix*: the mandible and its implications. *American Journal of Primatology*, 75(8): 825-836.
- 2012 **Klukkert ZS**, Teafora MF, and Ungar PS. A dental topographic analysis of chimpanzees. *American Journal of Physical Anthropology* 148: 276-284.
- 2012 **Klukkert ZS**, Dennis JC, M'Kirera F, and Ungar PS. Dental topographic analysis of the molar teeth of primates. In Bell LS (Ed.) *Forensic Microscopy for Skeletal Tissues: Methods and Protocols*. Humana Press, New York NY. p. 145-152.

GRANTS AND FELLOWSHIPS

Research Grants

- 2017 Exploration Fund Grant, The Explorers Club. CUNY Graduate Center.
- 2015 Ralph W. Stone Fellowship, National Speleological Society. CUNY Graduate Center.
- 2013 Provost's Digital Incubator Grant, CUNY Graduate Center.

Other Support

- 2019 American Association of Anatomists Conference Travel Grant. CUNY Graduate Center.
- 2009 New York Consortium in Evolutionary Primatology (NYCEP) Integrated Graduate Education and Research Traineeship (IGERT) Fellowship, NSF IGERT grant DGE 0333415. CUNY Graduate Center.

INVITED TALKS

- 2019 Biology Colloquium Series, Fordham University, New York, NY.
- 2018 Midwest Meetings of the National Speleological Society Cave Diving Section, St. Robert, MO.

CONFERENCE PARTICIPATION

Organization

- 2019 Cooke SB, **Klukkert ZS**, Scroton N (Conference Organizers)*. First Baltimore Symposium on Caribbean Natural History, Baltimore, MD, December 16-17. *Names ordered alphabetically.

Panel Contribution

- 2020* Invited Early Career Panelist, Student Meet and Greet event. American Association of Physical Anthropologists, Los Angeles, CA, April 2020. *Invitation accepted but the conference was cancelled due to COVID-19 pandemic.

Research Presented

- 2020* Halenar-Price LB, Cooke SB, **Klukkert ZS**, Sims Z, Almonte J, Lehman P, and Tallman L. Quantifying intraspecific variations in a Caribbean fossil primate. *Accepted for presentation but the conference was cancelled due to COVID-19 pandemic. American Association of Physical Anthropologists, Los Angeles, CA, April 2020.
- 2020* Lewis ME, Godfrey LR, Rakotondramavo J, **Klukkert ZS**, Scroton N, Burns SJ, Crowley BE, McGee D, Muldoon KM, Meador LR, Lehman P, Rahantaharivao NJ, and Ranivoharimanana L. A new extinct large predator in Madagascar: predation pressure on large-bodied Malagasy lemurs through time. *Accepted for presentation but the

- conference was cancelled due to COVID-19 pandemic.. American Association of Physical Anthropologists, Los Angeles, CA, April 2020.
- 2020* Godfrey LR, Muldoon KM, Burns SJ, Crowley BE, **Klukkert ZS**, Scroxton N, and Ranivoharimanana L. Natural and human impacts on vertebrate megafauna in southwest Madagascar. *Accepted for presentation but the conference was cancelled due to COVID-19 pandemic.. American Association of Physical Anthropologists, Los Angeles, CA, April 2020.
- 2019 **Klukkert ZS**. Flooded cave paleontology; promise and problems. Baltimore Symposium on Caribbean Natural History, Baltimore, MD, December 2019.
- 2019 **Klukkert ZS**, Halenar-Price LB, Almonte J, Shevchuk O, Lehman P, and Cooke SB. Newly-discovered craniomandibular remains preserve the first known incisors of the extinct Dominican monkey *Antillothrix bernensis*. American Association of Anatomists, Orlando, FL, April 2019.
- 2019 **Klukkert ZS**. Functional correlates of jaw shape diversity in platyrrhine sclerocarpic harvesters. American Association of Physical Anthropologists, Cleveland, OH, March 2019.
- 2019 Godfrey LR, **Klukkert ZS**, Lewis ME, Rahantaharivao NJ, Ranivoharimanana L, Faina P, Scroxton N, and Burns SJ. Night and day: Subfossil faunal representation in neighboring Malagasy caves illustrates interaction and exclusion by predator and prey. American Association of Physical Anthropologists, Cleveland, OH, March 2019.
- 2018 **Klukkert ZS**. Jaw muscle positions facilitate gape-specific feeding strategies in platyrrhines. American Association of Physical Anthropologists, Austin, TX, April 2018.
- 2017 **Klukkert ZS**. Canine tooth robusticity mitigates stress in the jaw. American Association of Physical Anthropologists, New Orleans, LA, April 2017.
- 2016* **Klukkert ZS**. Tooth size and diet among the extinct primates of the Caribbean. American Association of Physical Anthropologists, Atlanta, GA, April 2016. *abstract accepted, did not attend.
- 2016 Shearer BM*, Halenar LB, **Klukkert ZS**, Pagano AS, Reidenberg JS, and Tang CY. New insights into *Alouatta* vocal tract anatomy and functional morphology via CT and MRI. American Association of Physical Anthropologists, Atlanta, GA, April 2016. *Subsequent author names alphabetical.
- 2014 **Klukkert ZS**. Canine bending strength and fracture in durophagous platyrrhines. American Association of Physical Anthropologists, Calgary AB (CA), April 2014.
- 2012 Rosenberger AL, **Klukkert ZS**, Cooke SB, and Rímoli R. Rethinking *Antillothrix*: the mandible and its implications. International Primatological Society Meetings. Cancun, QR (MX), August 2012.
- 2012 **Klukkert ZS** and Harrison T. Jaw shape diversity in platyrrhine sclerocarpic foragers. American Association of Physical Anthropologists, Minneapolis, MN, April 2012.
- 2011 **Klukkert ZS** and Rosenberger AL. A new angle on the anterior dentition of platyrrhines: A preliminary report. American Association of Physical Anthropologists, Portland, OR, April 2011.
- 2010 **Klukkert ZS**, Ungar PS, and Teaford MF. Dental topographic analysis of chimpanzees. American Association of Physical Anthropologists, Albuquerque, NM, April 2010.
- 2010 Robinson C and **Klukkert ZS**. Revisiting shrinkage: A test of the long-term integrity of dental molds. American Association of Physical Anthropologists, Albuquerque, NM, April 2010.
- 2008 **Klukkert ZS**. Chimpanzee molar teeth from the outside in. University of Arkansas, Kansas, University in Missouri-Columbia and University of Kentucky (ARKUMOKY)

- annual paleoanthropology conference. University of Missouri-Columbia, Columbia, MO, October 2008.
- 2007 **Klukkert ZS.** Digitally “patching” surface anomalies in laser-scanned dental casts for topography studies. University of Arkansas, Kansas, and University of Missouri-Columbia (ARKUMO) annual paleoanthropology conference. University of Arkansas, Fayetteville, AR, October 2007.

TEACHING EXPERIENCE

Courses Taught

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| 2019 | Johns Hopkins University School of Medicine
Scientific Foundations of Medicine: Human Anatomy – Co-Instructor | Fa. 2019 |
| 2014-15 | Tulane University
Primate Adaptation & Evolution – Adjunct Assistant Professor
Primate Behavior & Ecology – Adjunct Assistant Professor | Sp. 2015
Fa. 2014 |
| 2012-15 | Brooklyn College, City University of New York
Caribbean Paleontology Field School (Dom. Republic) – Co-Instructor
Human Evolutionary Anatomy – Co-Instructor
Introduction to Physical Anthropology – Instructor
Forensic Science/Forensic Anthropology – Instructor | Sp. 2015
Fa. 2013
Sp. 2013
Fa. 2012 |
| 2012 | Icahn School of Medicine at Mount Sinai
Human Gross Anatomy – Dissection Lab Teaching Assistant | Fa. 2012 |
| 2007-08 | University of Arkansas
Introduction to Biological Anthropology Lab – Instructor | Fa. 2007, Sp. 2008 |
| 2004 | El Estación Biológica de Ometepe (Nicaragua)
Primate Behavior & Ecology Field School – Teaching Assistant | Wi. 2004 |

Formal Pedagogical Training

- 2020 Johns Hopkins Teaching Academy Certificate of Completion, Johns Hopkins University.

RESEARCH EXPERIENCE

Paleontology Field Research

- 2020* **Flooded Cave Paleontology in Madagascar – SCUBA Cave Diving.**
Role: Collaborator. PIs: Evon Hekkala, Christopher Raxworthy. Funding Source: National Science Foundation. Location: Southwest Madagascar and Antananarivo. Tasks: *Assisting in planning phase currently, postponed pending resolution of COVID-19 pandemic; I will direct on-site operations at flooded cave sites (SCUBA/cave diving), e.g., collect fossils and survey sites, and scout new sites.
- 2018,19 **Flooded Cave Paleontology & Paleoclimate in Madagascar – SCUBA Cave Diving.**
Role: Collaborator. PIs: Laurie Godfrey, Kathleen Muldoon, Stephen Burns, Brooke Crowley, Ventura Perez. Funding Sources: 1) National Science Foundation, Biological Anthropology; 2) National Science Foundation, Geosciences. Location: Tsimanampesotse

- National Park and Antananarivo, Madagascar. Tasks: Assisted in planning and logistics; directed on-site operations at flooded cave sites in and around Tsimanampesotse National Park (SCUBA/cave diving), e.g., collected fossils and speleothems from flooded cave sites, surveyed and mapped site and scouted prospective new sites; assisted in documentation and curation of new materials at the University of Antananarivo.
- 2019 **Paleontology & Paleoclimate in the Dominican Republic – SCUBA Cave Diving.**
Role 1: Principal Investigator. Role 2: Collaborator. Funding Source 1: Explorers Club Grant. Funding Source 2: Massachusetts Institute of Technology MISTI Grant; PIs: David McGee, Nick Scroxton. Location: Several sites, Dominican Republic. Tasks: Planning and logistics; directed underwater cave site operations (SCUBA/cave diving), e.g., collection, documentation, and curation of fossils and sampled speleothems at the Dominican Republic National Museum of Natural History.
- 2016 **Flooded Cave Paleontology in Madagascar – SCUBA Cave Diving.**
Role: Student Trainee. PI: Alfred Rosenberger; Supervisor: Laurie Godfrey. Funding Source: National Geographic Society Waitt Foundation Grant. Location: Tsimanampesotse National Park, Madagascar. Tasks: Participated in underwater cave operations in Tsimanampesotse National Park (SCUBA/cave diving), e.g., fossil collection, survey and documentation of fossil beds.
- 2015,16 **Education & Museum Enhancement in the Dominican Republic.**
Role: Graduate Student Project Manager. PI: Alfred Rosenberger. Funding Source: United States Agency for International Development (USAID). Location: Parque del Este and Santo Domingo, Dominican Republic. Tasks: Documented underwater paleontology sites at Padre Nuestro and La Jeringa caves; trained undergraduate students in field and museum-based fossil preservation, documentation and curation; selected and prepared material for permanent museum exhibit at the Dominican Museum of Man.
- 2012 **Paleontology Fieldwork in the Dominican Republic.**
Role: Student Trainee. PI: Alfred Rosenberger. Funding Source: National Geographic Society Waitt Foundation Grant. Location: Parque del Este and Santo Domingo, Dominican Republic. Tasks: Liaison with collaborating cave divers from Dominican Republic Speleological Society (DRSS); began training in basic SCUBA diving; documented and curated newly collected fossils at the Dominican Museum of Man collected from underwater cave sites.

Field Primatology Research

- 2010 **NYCEP Student Internship Project in Uganda.**
Role: Student Trainee. Supervisor: Jessica Rothman. Funding Source: National Science Foundation Integrated Graduate Education and Research Traineeship (IGERT). Location: Kibale National Park, Uganda. Tasks: Sampled material properties of foods eaten and recorded feeding behavior of wild primates (*Colobus guereza* and *Ptilocolobus badius*).
- 2003 **Primate Behavior & Ecology Field School in Nicaragua.**
Role: Student. Instructor: Paul Garber. Location: Ometepe Biological Field Station, Nicaragua. Tasks: Collected behavior data from wild primates (*Alouatta palliata*).
- 2003 **Primate Behavior & Ecology Field School in Costa Rica.**
Role: Student. Instructor: Lynn Bell. Location: La Suerte Biological Field Station, Costa Rica. Tasks: Collected behavior data from wild primates (*Alouatta palliata*).

Clinical Research

- 2008-09 **NIH Phase 1 Clinical Trial Assessing Surface Texture of Skin Lesions.**
 Role: Principal Investigator. Project Title: A Non-Invasive Method to Distinguish Melanoma from Benign Skin Lesions. Funding Source: NIH 1R43CA128247-01A1 REVISED. Location: University of Arkansas, Fayetteville, AR. Tasks: Coordinated clinician and engineers for the collection and analysis of skin lesion textures, performed skin texture analyses, composed procedural manuals for skin texture analysis, composed final reports.

SERVICE & OUTREACH

Service to Profession

- 2019 Journal Manuscript Peer Review, American Journal of Primatology.
 2016 Journal Manuscript Peer Review, American Journal of Physical Anthropology.

Volunteer Service for Education

- 2020 Judge, Maryland History Day State Competition, Breaking Boundaries, Website Presentations, Senior Division. University of Maryland, Baltimore, MD.
 2020 Visiting Scientist, “Skype a Scientist” Outreach Program. Classrooms served: Mr. Rassi’s 4th Grade Class, Akron Elementary, Akron, IN. Ms. Harper’s 3rd Grade STEM Class, Putnam County Elementary, Eatonton, GA.
 2014-15 Mentoring Scientist, The Greater New Orleans Science and Engineering Fair, Animal Sciences, High School Senior Division. New Orleans, LA.

Volunteer Service for Community Support

- 2017-19 Science Committee, National Speleological Society - Cave Diving Section.
 2016-17 Board Nomination Comm. Chair, National Speleological Society - Cave Diving Section.
 2005 Disaster Relief Volunteer, American Red Cross. General purpose volunteer staff in the wake of hurricanes Katrina and Rita, San Antonio, TX.

Web-Based Publications for Public Outreach

- 2018 **Klukkert ZS.** Paleontology in the flooded caves of Madagascar. Shearwater Research Invited Community Blog [web], <https://www.shearwater.com/monthly-blog-posts/paleontology-flooded-caves-madagascar/>.
 2016 **Klukkert ZS.** Project *Antillothrix*: Paleobiology in flooded Dominican caves. XDEEP Exploration Support Program report [web], <http://www.xdeep.eu/project-antillothrix-2016-sd-9.html>.
 2016 **Klukkert ZS.** Paleontology in the flooded caves of Madagascar. Madagascar Cave Diving Association research page [web], <https://www.madacaves.com/research>.
 2015 **Klukkert ZS.** The monkeys of the Antilles. “Project *Antillothrix*” website [web], <https://www.antillothrix.com/monkeys-of-the-antilles>.
 2015 **Klukkert ZS.** Antillean biogeography. “Project *Antillothrix*” website [web],

- 2015 <https://www.antillothrix.com/antillean-biogeography>.
Klukkert ZS. Lost mammals of Hispaniola. “Project *Antillothrix*” website [web],
<https://www.antillothrix.com/lost-mammals-of-hispaniola>.

Social Media Outreach

- 2016-19 “Project *Antillothrix*” Facebook page creator, manager: facebook.com/ProjectAntillothrix.

MEDIA COVERAGE

- 2019 “When Whales Walked” two-hour special broadcast on PBS [television]. Shining Red Productions, Inc., Twin Cities Public Broadcasting Service. Air date: June 19, 2019.
 2017 Herrera M. Espeleobuzos Conquistan Manantiales Dominicanos. 7días.com.do [web]. Retrieved from: http://www.7dias.com.do/elpais/2017/09/04/i233692_espeleobuzos-conquistan-manantiales-dominicanos.html#.Wa33bEGB6Ec.
 2017 Dax M. Underwater Caves are Earth’s Final Frontier. Outside Magazine Online [web]. Retrieved from: <https://www.outsideonline.com/2171946/underwater-caves-earths-final-frontier>.
 2016 Montanari S. Underwater Paleontology and the Monkeys of the Caribbean. Forbes Science [web]. Retrieved from: <https://www.forbes.com/sites/shaenamontanari/2016/08/22/underwater-paleontology-and-the-monkeys-of-thecaribbean/#28c7d979290c>.

SPECIALIZED SKILLS

Software

3D Surface Acquisition and Modeling: Agisoft Photoscan/Metashape (Photogrammetry), Breuckmann OPTOCAT (white-light laser scanner), NextEngine ScanStudio (laser scanner), Volume Graphics (MicroCT), Amira, Avizo, Geomagic Studio, Solidworks; 3D Geometric Morphometrics (3DGM): Landmark Editor, Morphologika 2.0; Finite Element Analysis: Solidworks Simulation; Geographic Information Systems: ArcGIS, IDRISI.

Technical SCUBA Diving

Certifications (Agency): Full Cave Diver (NSS-CDS, PSAI, IANTD), Advanced Nitrox and Decompression (IAN TD), Cave Decompression Procedures (NSS-CDS), Side-Mount Configuration in an Overhead Environment (PSAI), Multi-Stage Diving in an Overhead Environment (PSAI); Foundational SCUBA Certifications: Rescue Diver (PADI), Advanced Open Water SCUBA Diver (PADI), Open Water SCUBA Diver (PADI).

LANGUAGES

English: Native
 Spanish: Conversational