Sarah J Peacock, PhD

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# **EDUCATION**

2013 – 2019 **PhD in Integrative Anatomy, Pathobiology Area Program**

University of Missouri School of Medicine, Columbia, MO

Dissertation: *“Effects of Light and Melatonin on Activity, Bone Growth, and Bone Structure”*

Advisor: Kevin M Middleton, PhD

**Graduate Certificate in Science Outreach**

2009 – 2011 **Master of Science in Forensic Anthropology**

Boston University School of Medicine, Division of Graduate Medical Sciences, Boston, MA

Thesis: *“Craniometric and Non-metric Analysis of Skulls of Hispanic Descent”*

Advisors: Debra Prince Zinni, PhD, D-ABFA and Tara Moore, PhD

2005 – 2009 **Bachelor of Science in Biology**

**Bachelor of Science in Biological Anthropology**

George Washington University, Washington, DC

Thesis: *“Hepatitis C Virus-induced MicroRNA Regulation of the DLC-1 Gene”*

Advisor: Ajit Kumar, PhD

# **TEACHING EXPERIENCE**

2020 – present **Assistant Teaching Professor**

*Northeastern University – Department of Biology*

Develop and present lectures and written exams for the Integrated Anatomy & Physiology 1 and 2 courses. Hold weekly office hours and facilitate pre-exam study sessions. Coordinate instruction across multiple course sections.

2018 – 2020  **Education Associate II**

*Museum of Science, Boston – Traveling Programs Department*

Developed content for and taught hands-on STEM activities at Greater Boston area Boys and Girls Clubs for students ranging from lower elementary school to high school. Taught interactive workshops in community centers and schools throughout New England. Developed STEM-based drop-in activities and facilitated them at festivals and community events in the Greater Boston area. Developed and delivered dementia-friendly programming at local memory care facilities.

2018 **Guest Instructor**, ‘Mini Med School’ Summer Course

*Museum of Science, Boston*

Developed and led two 40-minute workshop sessions for a week-long summer course for 6th – 8th grade students interested in medical careers. Workshop topics included human joint anatomy and the impact of blue light on melatonin signaling.

2015 – 2017  **Human Anatomy Teaching Practicum**

*University of Missouri School of Medicine*

Prepared and presented clinical anatomy lectures and demonstrations for evaluation by faculty. Formats included 15-minute demonstrations using human donor dissections and traditional 50-minute lectures.

2017 **Guest Lecturer**, Forensic Pathology and Death Investigation

*University of Missouri – Department of Pathology & Anatomical Sciences*

Invited to present two 50-minute lectures on forensic anthropology for an undergraduate-level forensics class.

2014 – 2016 **Teaching Assistant**, Gross Human Anatomy

*University of Missouri School of Medicine*

Assisted first-year medical students with human gross anatomy dissections. Guided small groups of students through discussions of clinical relevance of observed anatomy during labs. Facilitated pre-exam review sessions. Assisted in laboratory upkeep.

2011 **Teaching Assistant**, Forensic Anthropological Techniques

*Boston University School of Medicine – Division of Graduate Medical Sciences*

Facilitated pre-exam review sessions and graded laboratory assignments for first-year Masters students in the Forensic Anthropology program. Assisted with laboratory setup and takedown.

2005 – 2009 **Teaching Assistant**, Biology for Non-Sciences Majors

*The George Washington University – Department of Biological Sciences*

Communicated complex topics in biology to non-major undergraduate students using real-world examples. Assisted students in laboratory with concepts, assignments, and microscopy. Provided one-on-one tutoring outside of designated laboratory time. Proctored weekly quizzes and assisted in laboratory set up and takedown.

# **OUTREACH EXPERIENCE**

2018  **SciComm University of Nebraska, Lincoln Science Festival**

*University of Nebraska, Lincoln*

Presented an interactive exhibit on functional morphology at a public science festival presented in association with the 2018 NE SciComm science communication conference and hosted by the Nebraska State Museum.

2018 **Science on Tap CoMO**

*Columbia, MO*

Presented doctoral research in a 20-minute presentation to a public audience of adults at a graduate student-run science communication program with the goal of providing the community with insight to various university research projects.

2017  **Science on Wheels**

*University of Missouri*

Travelled with a group of graduate students to a rural Missouri town to give a brief, all-ages presentation of my dissertation research as part of a graduate student-run science outreach program designed to bring science discussion to rural parts of Missouri and help make various science topics more accessible to populations that may not normally interact with scientists in their daily lives.

2017  **Benton Elementary STEM Showcase**

*University of Missouri and Benton Elementary School, Columbia MO*

Developed and facilitated 10-minute presentations on human joint anatomy at a science outreach event for grades 1-4.

2015 – 2017 **University of Missouri School of Medicine Anatomy Lab Visits**

*University of Missouri School of Medicine*

Introduced groups of visiting high school or undergraduate students interested in health careers to human anatomy and donor-based learning by presenting cadaver dissections in the medical school Gross Anatomy Laboratory. Multiple groups of 10-40 students visited each semester.

2015-2017 **CALEB Science Club**

*University of Missouri, and Granny’s House, Columbia MO*

Developed and facilitated Saturday morning science sessions on human clinically-oriented anatomy and mammalian comparative anatomy for high school and undergraduate students from the CALEB Science Club, an organization that provides and educational experiences for children living in public housing. Each two-hour session included a short lecture on human anatomy followed by a presentation of human donor dissections in the medical school Gross Anatomy Laboratory.

2015 – 2017 **Scrub-in to a Health Career**

University of Missouri, Columbia MO

Taught visiting high school students about the anatomy and function of the human heart during a two-hour lab visit via a brief lecture presentation and facilitation of free exploration of preserved human specimens.

2015  **Rock Bridge STEM Expo**

*Rock Bridge High School, Columbia MO*

Presented elementary school students with educational items such as fossils, bones, and human anatomical models and specimens to encourage curiosity about science and STEM careers.

2015  **Initiative for Maximizing Student Diversity Exposure to Research for Science Students graduate student panel**

*University of Missouri, Columbia MO*

Participated in a student panel discussion about our experiences in applying for and attending graduate school for an undergraduate program designed to increase student diversity and facilitate minority student involvement in the sciences.

2014 – 2018 **Dinosaurs and Cavemen Science Expo**

*University of Missouri and Rock Bridge High School, Columbia MO*

Planned, prepared, and delivered an interactive drop-in activity about identifying animal skulls for use in an annual paleontology outreach event aimed at elementary school students and their families. Encouraged participation in activities involving dinosaur trackways, fossils, comparative morphology, and human skeletal biology and engaged attendees in discussions about the science underlying these activiti0es.

2014  **14th Meeting of the Annual Biomedical Research Conference for Minority Students**

San Antonio, Texas

Served as a graduate student representative of University of Missouri in order to recruit conference attendees into the Life Sciences Program at a professional conference designed to encourage underrepresented students to pursue advanced education in STEM fields.

2014 **Soaring into Science**

*University of Missouri ReSTEM Institute and Columbia Public Schools, Columbia MO*

Presented students with educational items such as fossils, bones, and human anatomical models and specimens at an anatomy and paleontology outreach event aimed at introducing elementary school students to STEM topics.

2014 **Young Medics Camp**

*University of Missouri, Columbia MO*

Presented models and activities to visiting students aged 7-15 on human anatomy topics such as the skeleton, the brain, and the circulatory system during a one-hour summer field trip.

2013  **Show Me Nature K-12 Science Safari**

*University of Missouri, Columbia MO*

Engaged students with puzzles, models, and a ‘brain hat’ activity to help them learn about the brains of humans and other species as part of a STEM outreach event for 4th and 5th graders.

# **RESEARCH EXPERIENCE**

2015 **Research Rotation**, Advisor: Carol Ward, PhD

*University of Missouri – Department of Pathology & Anatomical Sciences*

Performed geometric morphometric analyses on landmark data collected from CT scans to quantify 3D thoracic shape in New World monkeys, Old World monkeys, and hominoids, to be applied to investigation of the relationship between scapular orientation and thoracic shape as it relates to locomotor behaviors.

2014 **Research Rotation**, Advisor: Kevin Middleton, PhD

*University of Missouri – Department of Pathology & Anatomical Sciences*

Investigated how the interaction between genetic background and exercise-driven mechanical loading impacted femoral morphology in three inbred strains of mice using histomorphometric and mechanical testing analyses. Published two peer-reviewed articles in the American Journal of Physical Anthropology.

2012 – 2013 **Graduate Research Fellow**, Supervisor: Debra Prince Zinni, PhD, D-ABFA

*Joint POW/MIA Accounting Command Central Identification Laboratory*

Analyzed, determined, and recorded criteria and analytical techniques to establish the accounting probability for all missing persons as part of the Solvability-Resolvability Rating Project.

2009 – 2011 **MS Research**, Advisor: Debra Prince Zinni, PhD, D-ABFA

*Boston University School of Medicine – Division of Graduate Medical Sciences*

Performed geometric morphometric analyses and forensic visual assessments of human crania of individuals of Hispanic descent to identify osteological features useful for estimating the ancestry of unidentified individuals as part of original thesis research.

2008 **Research Assistant**, PI: Arlene Haffa, PhD

*University of Wisconsin, Oshkosh – Department of Biological Sciences*

Performed bacterial cell culture and 2-D protein gel electrophoreses and analyzed MALDI-TOF data as part of a National Science Foundation Research Experience for Undergraduates.

2007 – 2009 **Research Assistant**, PI: Ajit Kumar, PhD

*The George Washington University – Department of Biochemistry & Molecular Medicine*

Investigated the role of microRNA signaling in Hepatitis C-driven proliferation of cancer cells via regulation of the DLC-1 gene. Performed mammalian and bacterial cell culture, cloning of plasmid DNA, PCRs, gel electrophoreses, and Western Blots. Communicated findings as a senior honors thesis. Supported by a Luther Rice Research Fellowship (2008 – 2009).

# **PUBLICATIONS**

***Peer-reviewed Articles***

1. **Peacock SJ,** Garland Jr. T, Middleton KM. 2018. Reply to Ruff, Warden, and Karlson. *Am J Phys Anthropol* 167(1):190-193.
2. **Peacock SJ**, Coats BR, Kirkland JK, Tanner CA, Garland Jr. T, Middleton KM. 2018. Predicting the Bending Properties of Long Bones: Insights from an Experimental Mouse Model. *Am J Phys Anthropol* 165(3):457-470
3. Leung W and Participating Students and Faculty of the Genomics Education Partnership. 2015. *Drosophila* Muller F Elements Maintain a Distinct Set of Genomic Properties over 40 Million Years of Evolution. *G3* 5(5):719-740

***Published Abstracts***

1. **Peacock SJ**, Middleton KM, Cavanaugh J, Wright T, Burow M, Barnes V, Munmun F, Witt-Enderby P. Effects of MEK 1/2 and MEK 5 Pathway Disruption on Skeletal Phenotypes in Intact Female SCID Mice. American Association of Anatomists Meeting at Experimental Biology. April 2018. San Diego, CA. In: The FASEB Journal 32(1\_supplement). Abstract 644.20.
2. **Peacock SJ,** Bates KA, Talton OO, Schulz LC, Middleton KM. Effects of Perinatal Circadian Programming on Activity and Skeletal Morphology in C57BL/6 Mice. American Association of Anatomists Meeting at Experimental Biology. April 2017. Chicago, IL. In: The FASEB Journal 31(1\_supplement). Abstract 577.18.
3. Middleton KM\*, **Peacock SJ**, Coats BR, Kirkland JK, Garland Jr., T. Comparison of Morphology and Bending Mechanics of Femora in Response to Chronic Exercise in Three Strains of Mice. American Association of Anatomists Meeting at Experimental Biology. April 2016. San Diego, CA. In: The FASEB Journal 30(1\_supplement). Abstract 368.2. \*Presenting author.
4. **Peacock SJ,** Coats BR, Kirkland JK, Tanner CA, Middleton KM. History of Exercise, Cross-Sectional Geometry, and Bending Mechanics: Inferences Based on Three Strains of Mice. Poster presented at: 85th Annual Meeting of the American Association of Physical Anthropologists. April 2016. Atlanta, GA. Abstract 29.36.
5. Ward CV\*, **Peacock SJ**, Maddux SD, and Winkler Z. Covariation among elements of the bony torso in anthropoids. American Association of Anatomists Annual Meeting at Experimental Biology. April 2015. Boston, MA. In: The FASEB Journal 29(1\_supplement). Abstract 701.1. \*Presenting author.
6. **Peacock SJ** and Zinni DP. Craniometric and nonmetric assessment of skulls of Hispanic descent. In: Proceedings of the American Academy of ForensicSciences. February 2012. Atlanta, GA. Abstract H45.

# **OTHER RESEARCH PRESENTATIONS**

***Invited Talks***

2017 “Effects of Photoperiod on Bone Growth: Implications for Bone Health.” Department of Biological Sciences EcoLunch, University of Missouri.

2014 “Genetic and Environmental Effects on Skeletal Form in Mice.” Department of Pathology & Anatomical Sciences Grand Rounds, University of Missouri School of Medicine.

***Regional Poster Presentations***

2018 **Peacock SJ** and Middleton KA. Effects of Nocturnal Blue Light Exposure on Physiology and Skeletal Morphology in Two Strains of Mice. Life Sciences Week Poster Session, University of Missouri.

2017 **Peacock SJ,** Bates KA, Talton OO, Schulz LC, Middleton KM. Effects of Perinatal Circadian Programming on Activity and Skeletal Morphology in C57BL/6 Mice. Health Sciences Research Day Poster Session, University of Missouri School of Medicine.

2017 **Peacock SJ,** Bates KA, Talton OO, Schulz LC, Middleton KM. Effects of Perinatal Circadian Programming on Activity and Skeletal Morphology in C57BL/6 Mice. Life Sciences Week 2017 Poster Session, University of Missouri.

2016 **Peacock SJ,** Coats BR, Kirkland JK, Tanner CA, Middleton KM. History of Exercise, Cross-Sectional Geometry, and Bending Mechanics: Inferences Based on Three Strains of Mice. University of Missouri Health Sciences Research Day Poster Session, University of Missouri School of Medicine.

2016 **Peacock SJ,** Coats BR, Kirkland JK, Tanner CA, Middleton KM. History of Exercise, Cross-Sectional Geometry, and Bending Mechanics: Inferences Based on Three Strains of Mice. University of Missouri Life Sciences Week Poster Session, University of Missouri.

2015 Kirkland JK\*, **Peacock SJ**, Coats BR, and Middleton KM. Effects of Cross-Sectional Area on Bone Strength in Three Strains of Mice. 15th Meeting of the Annual Biomedical Research Conference for Minority Students. Seattle, WA. \*Presenting author.

2015 **Peacock SJ** and Ward CV. Thorax shape and positional behavior in anthropoid primates. Life Sciences Week Poster Session, University of Missouri.

2014 **Peacock SJ**, Coats BR, Tanner CA, and Middleton KM. *Minimsc* Genotype Increases Resistance to Bending in Mouse Femora. Life Sciences Week Poster Session, University of Missouri.

# **GRANTS, AWARDS, AND HONORS**

2018 American Association of Anatomists Student Travel Award, $350

2017 American Association of Anatomists Student Travel Award, $250

2017 Outstanding Poster: Insightful Presentation of an Interesting Project with Real World Implications in the Ecological and Evolutionary Genetics/Genomics and Developmental Biology Groups, University of Missouri Life Sciences Week Poster Competition, $100

2016, 2018 Outstanding Graduate Student in Outreach, Department of Pathology & Anatomical Sciences, University of Missouri

2016 Endocrine Society Early Career Forum Travel Award, $400 plus conference and early career workshop registration waivers

2016 American Association of Physical Anthropologists Pollitzer Student Travel Award, $500

2013 – 2018University of Missouri Gus T. Ridgel Fellowship, $20,000 distributed over 5 years

2013 – 2017University of Missouri Life Sciences Fellowship, $100,000 distributed over 4 years plus tuition

# **OTHER TRAINING**

2019 **‘Investigation-Based Teaching Practices’ Professional Development Course**

*Museum of Science, Boston – Traveling Programs Department*

Completed suite of three online courses (Learning Approaches to Foster Engineering, Adult and Child Interactions to Foster Engineering, and Enhancing the Environment to Foster Engineering) on how to support engineering in open-ended STEM play for early learners.

2016 **‘Decoding Science’ Science Communication Program**

*University of Missouri*

Completed 10 weeks of training on how to incorporate visual design elements, theater practices, and storytelling into scientific presentations for more effective communication. Presented 3-minute talks on dissertation research aimed at general audiences.

2012 **Internship**, Supervisor: Vincent Sava

*Joint POW/MIA Accounting Command Central Identification Laboratory*

Collected personal information on missing Korean War personnel and entered it into a central database as part of the Solvability-Resolvability Rating Project. Cleaned and sorted skeletal remains of recently exhumed soldiers.

2011 **Forensic Anthropology Internship**, PI: Murray Marks, PhD

*University of Tennessee Medical Center – Regional Forensic Center*

Performed soft tissue macerationand cleaned skeletal elements in the Decomposition Autopsy room.

# **SERVICE**

2014 – 2017 President, Integrative Anatomy Student Association, University of Missouri

# **PROFESSIONAL MEMBERSHIPS**

2020 – present Human Anatomy and Physiology Society

2017 – present American Association for the Advancement of Science

2016 – present American Association of Anatomists

2014 – 2015 American Association of Physical Anthropologists

# **FEILD EXPERIENCE**

2011 **Field School in Bioarchaeology and Forensic Anthropology**

*University of Massachusetts, Amherst*

Received classroom training in human osteology, bioarchaeology, and forensic anthropology, including bone fragment recognition and burned bone analysis. Participated in the excavation of a simulated bioarchaeological site and conducted lab analyses on artifacts and skeletal remains found.

2010 **Phase I Archaeological Survey**, PI: Debra Prince Zinni, PhD, D-ABFA

*Woburn, MA*

Assisted Woburn Police in the search for the clandestine grave of a homicide victim on two occasions. Methods included surface reconnaissance and subsurface testing.