

# Austin B. Lawrence

(he/they)

Department of Pathology and Anatomical Sciences

M263 Medical Sciences Building

University of Missouri School of Medicine

Columbia, MO 65212

austin.lawrence@mail.missouri.edu | austinblawrence.com

<https://orcid.org/0000-0001-5988-8495>

## EDUCATION

- 2017-      Ph.D. (in progress, expected May 2023) in Integrative Anatomy  
Department of Pathology and Anatomical Sciences  
University of Missouri School of Medicine (Columbia, MO)  
Advisor: Dr. Carol V. Ward
- 2013-2017      B.A. in Anthropology (Biological Anthropology), *summa cum laude*  
University of Colorado Boulder (Boulder, CO)  
Advisors: Dr. Matt Sponheimer & Dr. Dennis Van Gerven

## RESEARCH INTERESTS

Hominin Evolution	Hominin Pelvis & Lower Limb Morphology
Primate Locomotion	Early Hominin Paleoecology
Locomotor Biomechanics	Evolution of Hominin Diet
Bone Functional Adaptation	Ecological Morphology

## PUBLICATIONS

Bergstrom K, **Lawrence AB**, Pelissero AJ, Hammond LJ, Maro E, Bunn HT, Musiba CM. (2019). Aerial map demonstrates erosional patterns and changing topography at Isimila, Tanzania. *South African Journal of Science* 115 (7/8), Art. #5911. DOI: 10.17159/sajs.2019/5911.

Corrigendum (2022): <https://doi.org/10.17159/sajs.2022/5911C>

Paine OCC, Leichliter JN, Avenant NL, Codron DC, **Lawrence A**, Sponheimer M. (2019). The ecomorphology of southern African rodent incisors: Potential applications to the hominin fossil record. *PLoS ONE* 14(2): e0205476. <https://doi.org/10.1371/journal.pone.0205476>.

**Lawrence AB**, Sandberg PA, Van Gerven DP, Sponheimer M. (2018). Evidence for differences in activity between socioeconomic groups at Kulubnarti, Nubia (550-800 CE), from osseous modifications of the proximal femur. *International Journal of Osteoarchaeology* 28(6): 735-744. DOI: 10.1002/oa.2699.

## Publications Submitted or In Prep

[in prep] **Lawrence AB**, Hammond AS, Ward CV. Acetabular orientation and the evolution of hominin bipedality. To be submitted to *PNAS*.

[in prep] **Lawrence AB**, Boeyer ME, Middleton KM. DigitizeEOS: A new method for calibration and reconstruction of 3D anatomy from biplanar radiographs. To be submitted to *International Orthopaedics*.

[in prep] Musiba et al. New Pliocene hominin fossils from Laetoli, Tanzania.

[in prep] **Lawrence AB**, Townsley S, Ward CV, Duren DL, Crist BD. Relationship of femoroacetabular impingement symptoms to hip anatomy. To be submitted to the *Journal of Bone and Joint Surgery*.

[in prep] **Lawrence AB**, Townsley S, Ward CV, Crist BD, Duren DL. Hip skeletal variation and implications for femoroacetabular impingement. To be submitted to *The Anatomical Record*.

## GRANTS & FUNDING

[pending] Paleontological Society Education/Outreach Grant, Senior Personnel, PI: Holliday CM (\$2500)

[pending] National Science Foundation DDRIG, co-PI, PI: Ward CV (\$6,044)

2022-2023 MU SEC Emerging Scholars Doctoral Fellowship (\$10,000 Supplemental Stipend & \$3000 Research and Professional Development Funds)

2022-2023 Leakey Foundation Research Grant, PI (\$7,471)

2021 MU Graduate & Professional Council Research Development Award (\$550)

2021-2022 Sigma Xi Grant-in-Aid of Research (\$1,000)

2017-2021 University of Missouri Life Sciences Fellowship (\$100,000 + tuition & fees)

2016 Norlin Enrichment Funding, University of Colorado Boulder (\$1730)

2015-2016 Individual Grant, UCB Undergraduate Research Opportunities Program (\$1125)

## AWARDS & HONORS

2022 American Association for Anatomy Student/Postdoc Travel Award (\$400)

2019 Outstanding Graduate Student in Outreach, Department of Pathology & Anatomical Sciences, University of Missouri School of Medicine

2019 MU Graduate & Professional Council Conference Presentation Travel Award (\$300)

2018 University of Missouri Life Sciences First-Year Travel Award (\$750)

2017 Third Place Presentation Award, Postgraduate Basic Science Division, University of Missouri Health Sciences Research Day

2017 Alice M. Brues Award for the Outstanding Graduate (CU Boulder Anthropology)

2016 Sigma Xi Undergraduate Research Award (CU Boulder Chapter)

2015 University of Colorado Boulder Arts and Sciences Dean's Scholarship (\$500)

2014 Golden Key International Honor Society

2013-2017 Norlin Scholarship Award, University of Colorado Boulder (\$19,000)

2013-2017 Joseph A. Sewall Scholarship Award, University of Colorado Boulder (\$20,000)

2013-2017 Dean's List, University of Colorado Boulder (3 semesters)

2012 University of Colorado Boulder Outstanding Colorado Student Award (\$4000)

## CITABLE DATASETS

UAV Map of Isimila, Tanzania. <https://doi.org/10.5281/zenodo.4592344>

Collaborative UAV-based Orthomosaic of Isimila, Tanzania. DOI: 10.5281/zenodo.1470781

## REFEREED ABSTRACTS (Conference Presentations)

**Lawrence AB**, Boeyer ME, Middleton KM. A New Method for Quantifying 3D Skeletal Morphology in Living Subjects Using Low-Dose Stereo Radiographs. *The FASEB Journal* 35 (S1). DOI: 10.1096/fasebj.2022.36.S1.R6099.

**Lawrence AB**, Boeyer ME, Middleton KM. A new method for quantifying 3D anatomy of living subjects using low-dose stereo radiographs. *American Journal of Biological Anthropology* 177: 105.

Pelissero AJ, Bergstrom K, **Lawrence AB**, Hammond LJ, Magori C, Maro E, Mwambungu M, Bates CR, Bateman R, Bunn HT, Musiba CM. Transparency and data sharing in paleoanthropology: A case study of Isimila, Tanzania. American Anthropological Association 2021 Annual Meeting.

**Lawrence AB**, Hammond AS, Ward CV (2021). Acetabular Orientation in Hominins and Other Anthropoids. *The FASEB Journal* 35 (S1). DOI: 10.1096/fasebj.2021.35.S1.04410.

**Lawrence AB**, Hammond AS, Ward CV (2021). Acetabular orientation and pelvic form in hominins and other anthropoids. *American Journal of Physical Anthropology* 174: 60.

**Lawrence AB**, Hammond AS, Ward CV. Acetabular orientation and pelvic shape in hominins. Society for Integrative and Comparative Biology 2021 Virtual Meeting.

\***Lawrence AB**, Hammond AS, Ward CV. Acetabular orientation in hominins. Paleoanthropology Society 2020 Annual Meetings (*PaleoAnthropology*).

\*[Conference cancelled due to COVID-19 pandemic].

**Lawrence AB**, Townsley S, Ward CV, Crist BD, Duren DL (2019). Modern evidence of femoroacetabular impingement: implications for interpretations in the archaeological record. *American Journal of Physical Anthropology* 168: 138.

Musiba CM, Pelissero A, Bergstrom K, Magori CC, Maro E, Hammond LJ, **Lawrence AB**. The Use of UAV's in Forensic Anthropology: A technical note from Archaeological survey at Isimila, Tanzania. African Society of Forensic Medicine 8<sup>th</sup> Annual Meetings. Dar es Salaam, Tanzania, March 2019.

**Lawrence AB**, Townsley S, Ward CV, Duren DL, Crist BD (2019). Non-metric Skeletal Traits are Related to Cam-type Femoroacetabular Impingement. Orthopaedic Research Society Annual Meetings, Austin, TX.

**Lawrence AB**, Sandberg PA (2018). The Evolution of Femoroacetabular Impingement. *American Journal of Physical Anthropology* 165(S66): 154.

Pelissero AJ, Bergstrom K, Hammond LJ, **Lawrence AB**, Bunn HT, Musiba CM (2018). Drone mapping of Isimila, Tanzania: The Implications for Future Research into Mid-Pleistocene *Homo* Behavior. *PaleoAnthropology* 2018: A26.

**Lawrence AB**, Sandberg PA (2016). Femoroacetabular impingement: relationship to non-metric pathologies of the proximal femur. *American Journal of Physical Anthropology* 159(62): 204.

**Lawrence AB**, Sandberg PA (2015). Femoro-acetabular impingement in a skeletal assemblage from medieval Nubia. *American Journal of Physical Anthropology* 156(60): 199.

## INVITED PRESENTATIONS

Jan. 20, 2022

**Effect of hip joint orientation and pelvic morphology on human locomotor biomechanics: Implications for interpreting locomotion in fossil hominins.** Life Sciences Fellowship Seminar, Bond Life Sciences Center, University of Missouri.

- Nov. 30, 2021      **Form and Function in Human Skeletal Anatomy: Translating Anatomical Research to Orthopaedic Practice.** Thompson Laboratory for Regenerative Orthopaedics Student Association Fall 2021 Symposium, Missouri Orthopaedic Institute.
- June 22, 2020      **Hip Joint Orientation and Human Evolution: Using Clinical Tools to Address Evolutionary Questions.** Mizzou Musculoskeletal Research Training Program Symposium, Department of Orthopaedic Surgery, University of Missouri School of Medicine. [online symposium]
- April 6, 2017      **Research in Biological Anthropology.** Anthro Undergraduate Research Seminar Series, University of Colorado Boulder Anthropology Club.
- Feb. 20, 2017      **The Evolution of Femoroacetabular Impingement.** Boettcher Scholarship Finalist Day. Office of Undergraduate Admissions, University of Colorado Boulder.
- Nov. 3, 2016      **Paleoanthropology Fieldwork as an International Experience.** President's Leadership Class (Recitation), University of Colorado Boulder.

#### **OTHER WRITTEN CONTRIBUTIONS (non-peer reviewed)**

- 2019      Contributor, MeTooAnthro *et al.* "Best Practice Guidelines and Action Plan for Events." Published Online: <https://metooanthro.org/resources/best-practice-guidelines/>

#### **OTHER PRESENTATIONS**

**Lawrence AB**, Hammond AS, Ward CV. Acetabular Orientation in Humans and Other Primates. Mizzou Musculoskeletal Research Training Program Virtual Symposium, Department of Orthopaedic Surgery, University of Missouri School of Medicine, May 2021.

**Lawrence AB**, Townsley S, Ward CV, Crist BD, Duren DL (2019). Modern evidence of femoroacetabular impingement: implications for interpretations in the archaeological record. University of Missouri Life Sciences Week, April 2019.

**Lawrence AB**, Townsley S, Ward CV, Duren DL, Crist BD. Non-metric Skeletal Traits are Related to Cam-type Femoroacetabular Impingement. University of Missouri Health Sciences Research Day, Nov. 15, 2018.

**Lawrence AB**, Sandberg PA. The Evolution of Femoroacetabular Impingement. Poster Presentation, Society for Integrative and Comparative Biology, Division of Vertebrate Morphology, Midwest Regional Meeting. Oct. 6, 2018.

**Lawrence AB**, Sandberg PA. The Evolution of Femoroacetabular Impingement. Poster Presentation, University of Missouri School of Medicine Health Sciences Research Day. Nov. 9, 2017. (Awarded Third Place in Postgraduate Basic Science Division).

**Lawrence AB**. Quantifying Pathologies of the Hip in the Archaeological Record: Applying Clinical Diagnostics to Ancient Human Activity. Podium Presentation, Special Undergraduate Enrichment Programs Research Conference, University of Colorado Boulder. April 2016.

**Lawrence AB.** Femoroacetabular impingement in a skeletal assemblage from medieval Nubia. Podium Presentation, Special Undergraduate Enrichment Programs Research Conference, University of Colorado Boulder. April 2015.

## **RESEARCH & LABORATORY EXPERIENCE**

- 2021- **Mizzou Motion Analysis Center, Department of Physical Therapy, University of Missouri School of Health Professions**  
Dissertation data collection & assist in other lab projects. Lab uses Vicon motion capture system, AMTI force platforms, Delsys Trigno Wireless EMG.  
PI: Dr. Trent Guess, co-PI: Dr. Jamie Hall
- 2018- **Skeletal Morphology Laboratory, Missouri Orthopaedic Institute  
Department of Orthopaedic Surgery, University of Missouri School of Medicine**  
Research rotation with Dr. Dana Duren and Dr. Brett Crist studying anatomical correlates of femoroacetabular impingement in a clinical sample.  
PI: Dr. Dana Duren
- 2017- **Ward Lab, Department of Pathology and Anatomical Sciences  
University of Missouri School of Medicine**  
Primate and Hominin Functional Morphology & Evolution  
PI: Dr. Carol V. Ward
- 2015-2017 **Nutritional and Isotopic Ecology Lab (NIEL)  
Department of Anthropology, University of Colorado Boulder**  
Stable isotope analysis of human and faunal remains (sample prep); digital microscopy; modern & fossil micromammal ecomorphology for hominin paleoenvironmental reconstruction.  
PI: Dr. Matt Sponheimer
- 2016-2017 **Human Anatomy Laboratory, Department of Integrative Physiology,  
University of Colorado Boulder**  
Dissecting intern (2016) then volunteer dissector (2017). Dissected human cadavers for undergraduate anatomy teaching labs.  
Supervisor: Ruth Heisler
- 2015-2016 **Río Verde Regional Isotope Project  
Department of Anthropology, University of Colorado Boulder**  
Prepared human & faunal skeletal samples for stable isotope analysis.  
Directors: Dr. Art Joyce (Río Verde), Dr. Guy Hepp (La Constentida)
- 2014-2017 **Skeletal Biology Laboratory  
Department of Anthropology, University of Colorado Boulder**  
Student Curator of Skeletal Biology (2016-2017) and undergraduate researcher.  
Supervisors: Dr. Dennis Van Gerven, Dr. Paul A. Sandberg
- 2014 **Independent Study  
Department of Anthropology, University of Colorado Boulder**  
Cleaned, sorted, and analyzed ceramic, lithic, and faunal material in flotation samples from the Woodrow Ruin in southwestern New Mexico under the supervision of Dr. Catherine Cameron & Dr. Jakob Sedig

## FIELD EXPERIENCE

- 2020      **West Turkana Paleo Project**  
Lomekwi, West Turkana, Kenya  
Directors: Dr. Carol Ward, Dr. Fredrick Kyalo Manthi, Dr. J. Michael Plavcan
- 2017      **University of Colorado Denver Biological Anthropology Field School**  
Isimila & Laetoli, Tanzania  
Supervisors: Dr. Charles Musiba, Dr. Henry Bunn, Kersten Bergstrom.
- 2016      **Field Research Volunteer, South African Coastal Paleoclimate, Paleoenvironment, Paleoecology, Paleoanthropology (SACP4) Project**  
Pinnacle Point Cave 5-6 & Vleesbaai, Mossel Bay, Western Cape, South Africa  
Supervisors: Dr. Curtis Marean, Dr. Jayne Wilkins, Dr. Erich Fisher

## MUSEUM RESEARCH EXPERIENCE

- 2020      Department of Earth Sciences, National Museums of Kenya, Nairobi, Kenya
- 2016      Department of Zoology, Denver Museum of Nature & Science, Denver, CO

## TEACHING EXPERIENCE

### University of Missouri & University of Missouri School of Medicine

- Spring 2022    Teaching Assistant/Lab Instructor, Undergraduate Anatomy Lab (1 section)
- Spring 2022    Teaching Assistant, Undergraduate Anatomy Lecture (Hybrid Course, 2 sections)
- Fall 2021      Teaching Assistant/Lab Instructor, Undergraduate Anatomy Lab (2 sections)
- Fall 2021      Teaching Assistant, Undergraduate Anatomy Lecture (Hybrid Course, 2 sections)
- 2019          Substitute Lab Instructor, Undergraduate Anatomy
- Spring 2019    Teaching Assistant, Medical Gross Anatomy Block 4: Pelvis & Lower Limb
- Spring 2019    Teaching Assistant, Medical Gross Anatomy Block 3: Head, Neck, Neuro
- Fall 2018      Teaching Assistant, Medical Gross Anatomy Block 2: Thorax & Abdomen
- Fall 2018      Teaching Assistant, Medical Gross Anatomy Block 1: Back & Upper Limb

### University of Colorado Boulder

- Fall 2015      Review Sessions for ANTH 2010 Introduction to Biological Anthropology I
- Spring 2015    Teaching Assistant, ANTH 4130/5130 Advanced Osteology

### Other/Guest Lectures

- Fall 2021      Guest Lecture, Ecology & Evolution Course, Roanoke College
- Fall 2020      Guest Lecture & Lab Presentations, BIO 354 Human Anatomy for Health Professionals, School of Biological Sciences, Washington State University-Tri-Cities
- Spring 2020    \*Guest Lecture, BIO\_SC 3400 Ecology & Evolution, University of Missouri  
\*Digital materials also used during Spring 2022 Semester

## MENTORING & STUDENT SUPERVISION

### Undergraduate Mentoring & Supervision

- 2021-          Audrey Warbritton, Ward Lab Collections Inventory, Curation, and Management
- 2020-          Adams Mutuku (University of Nairobi), during fieldwork at Lomekwi, Kenya;  
Remote mentoring 2020-present

## PROFESSIONAL DEVELOPMENT

- [enrolled]      Preparing Future Faculty Seminar, University of Missouri (GRAD 9010, Fall '22)

[accepted]	SEC Emerging Scholars Career Preparation Workshop (Sept. 27-29, 2022)
2021	Equitable Peer Review Workshop, AAPA 2021 Virtual Meeting
2021	Teaching Biological Anthropology in Inclusive and Culturally/Religiously Sensitive Ways, Dr. Briana Pobiner & Dr. Rob O'Malley, AAPA 2021 Virtual Meeting
2018-2020	Anatomy Teaching Practicum (Prepared and delivered lectures and human donor-based lab prosecutions). Department of Pathology and Anatomical Sciences, University of Missouri School of Medicine
2018-2019	Professional Development Workshop Series, Department of Pathology and Anatomical Sciences, University of Missouri School of Medicine
2018	Inclusive Teaching Workshop, University of Missouri Division of Inclusion, Equity & Diversity
2017	Active Learning Strategies Workshop, Dr. Cheryl Hill, University of Missouri School of Medicine

## SERVICE

2022-	Co-Founder (with Sarah Cosgriff), Aces in STEM (@AsexualSTEM)
2021-	Co-Coordinator, AABA COD-LGTBQQIAA Speaker Series ("Bite-Size BioAnth")
2021	Assistant Session Chair (2 sessions), 90 <sup>th</sup> Annual AAPA (Virtual) Meeting
2021-	Mizzou Pride Healthcare Alliance LGBTQ+ Healthcare Education Committee
2021-	President & GPC Representative, Integrative Anatomy Students Association
2018-	Secretary, Integrative Anatomy Students Association
2016-2017	Natural Science Editor, University of Colorado Boulder Honors Journal
2015-2016	CU Boulder Department of Anthropology Inclusive Excellence Committee
2014-2015	CU Boulder Department of Anthropology Student Oversight Committee
2014-2015	Student Programming Leader, Honors RAP, University of Colorado Boulder
2013-2017	Student Ambassador, Office of Undergraduate Admissions, CU Boulder

## OUTREACH & EXTENSION (\* indicates invited presentations or events)

2022	<p>Paleontology, Evolution, Human Anatomy TikTok Videos (@humanaustinology)</p> <p>Collaborative Events with Columbia STEM Alliance and CPS (Planning)</p> <p>*Science National Honor Society, Horizon HS, Thornton, CO (2/15/22)</p> <p>*Presentation, Careers in Life Sciences (BIOL 210), WSU Tri-Cities (1/26/22)</p> <p>*Virtual Class Discussion, Department of Biology, Roanoke College</p> <p>Letters to a Pre-Scientist, STEM Professional Pen-Pal (English &amp; Spanish)</p>
2021	<p>*Guest on <i>Queer Science!</i> Podcast (<a href="https://bit.ly/3ML1ObY">https://bit.ly/3ML1ObY</a>)</p> <p>*<a href="#">Show Me Science Video Series</a>, MU Division of Biological Sciences</p> <p>Letters to a Pre-Scientist, STEM Professional Pen-Pal</p> <p>*Virtual Class Discussion, Department of Biology, Roanoke College</p>
2020	<p>Skype a Scientist (1 classroom visit)</p> <p>Integrative Anatomy Open House, Columbia, MO</p>
2019	<p>Pen Pal, Letters to a Pre-Scientist (2019-2020 academic year)</p> <p>Rock Bridge STEM Expo, Rock Bridge High School, Columbia, MO</p> <p>Benton Elementary School STEM Showcase, Columbia, MO</p> <p>Caleb Science Pre-College Group Fall Kickoff Event, Columbia, MO</p> <p>Ask a Grad Student, MU Life Sciences Expo, University of Missouri, Columbia</p> <p>*Meet a Scientist, Soaring into Science, MU Div. of Biological Sciences</p> <p>Science Tent, Art in the Park, Columbia, MO</p> <p>Science Enrichment Presentation, West Middle School, Columbia, MO</p> <p>Columbia Young Scientists Expo, MU Research Connector, Columbia, MO</p>

Tours of gross anatomy laboratory for local high school students

- 2018      Rock Bridge STEM Expo, Rock Bridge HS, Columbia, MO  
SciFest, St. Louis Science Center, St. Louis, MO  
Caleb Science Pre-College Group Fall Kickoff Event, Columbia, MO  
Science Tent, Art in the Park, Columbia, MO  
Dinosaurs & Cavemen Science Expo, Columbia, MO (NSF supported)  
Caleb Science Pre-College Group, Columbia, MO  
2 tours of gross anatomy laboratory for local high school students
- 2017      Rock Bridge STEM Expo, Rock Bridge HS, Columbia, MO  
Benton Elementary School STEM Showcase, Columbia, MO
- 2016      “Nefertiti’s City” Bones Workshop, Boulder Public Library, Boulder, CO  
(Organizer & Presenter)

#### **AD HOC PEER REVIEW**

- 2022      American Journal of Biological Anthropology (1 manuscript)

#### **PROFESSIONAL ASSOCIATIONS**

American Association of Biological Anthropologists (2014-present)  
American Association for Anatomy (2019-present)  
Society for Integrative and Comparative Biology (2020-present)  
Society of Vertebrate Paleontology (2020-present)  
Paleoanthropology Society (2015-present)  
Orthopaedic Research Society (2019)  
Sigma Xi: The Scientific Research Honor Society (2016-present)  
American Anthropological Association (2015)