

## ADAM D. SYLVESTER, PH.D.

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### CURRICULUM VITAE

Center for Functional Anatomy and Evolution  
The Johns Hopkins University School of Medicine  
1830 E. Monument Street  
Baltimore, MD 21205

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### EDUCATION

- 2001-2006      **Ph.D. in Anthropology**  
The University of Tennessee, Knoxville
- 1998-2000      **M.A. in Anthropology**  
The University of Tennessee, Knoxville
- 1992-1996      **B.S. in Zoology** (*magna cum laude*)  
The University of Tennessee, Knoxville

### PROFESSIONAL APPOINTMENTS

- 2020-Present      **Associate Professor**  
Center for Functional Anatomy and Evolution  
The Johns Hopkins University School of Medicine
- 2019-Present      **Director of Graduate Studies**  
Center for Functional Anatomy and Evolution  
The Johns Hopkins University School of Medicine
- 2015-2020      **Assistant Professor**  
Center for Functional Anatomy and Evolution  
The Johns Hopkins University School of Medicine
- 2013-2015      **Lecturer** (equivalent to U.S. Assistant Professor)  
College of Medical, Veterinary, and Life Sciences  
School of Life Sciences  
University of Glasgow
- 2013-2015      **Adjunct Lecturer**  
Institute of Biodiversity, Animal Health, and Comparative Medicine  
University of Glasgow

- 2009-2013            **Junior Researcher**  
Department of Human Evolution  
Max Planck Institute for Evolutionary Anthropology
- 2007-2009            **Postdoctoral Fellow**  
Center for Functional Anatomy and Evolution  
The Johns Hopkins University School of Medicine
- 2006-2007            **Postdoctoral Research Associate**  
Department of Mechanical, Aerospace, and Biomedical Engineering  
The University of Tennessee, Knoxville

**FUNDING**

- 2021-2023            **National Institute of Justice: Research and Development in Forensic Sciences for Criminal Justice Purposes**  
Role: Co-Principal Investigator  
Collaborators: D Wescott, PI for Texas State University; D Cunningham co-PI for Texas State University; W Zbijewski, co-PI for JHU  
Title: Body mass estimation using bone micro- and macro-structure: a practical approach using CT imaging and computer analysis.  
Award Number: 2020-R2-CX-0048  
\$683,542
- 2019-2021            **National Science Foundation: Division of Behavioral and Cognitive Sciences**  
Role: Principal Investigator  
Collaborators: D Wescott, PI for Texas State University; D Cunningham co-PI for Texas State University  
Title: Collaborative Research: Obesity as a Natural Experiment to Investigate Bone Functional Adaptation.  
Award Number: 1923044  
\$255,502
- 2018-2020            **National Science Foundation: Division of Behavioral and Cognitive Sciences, Doctoral Dissertation Research Improvement Grant**  
Role: Principal Investigator  
Collaborator: CM Harper, co-PI, Ph.D. Candidate JHU  
Title: External and Internal Structure of Extant and Fossil Hominid Calcanei.  
Award Number: 1824630  
\$31,431

- 2016                    **American Association for Anatomy: Innovation Award**  
Role: Principal Investigator  
Collaborator: J Mussell, Louisiana State University Health Science Center  
Title: Anatomy for Every Body.  
High school outreach targeting student from groups underrepresented in  
STEM fields.  
\$50,000
- 2015                    **University of Glasgow: Undergraduate Summer Studentship**  
Role: Principal Investigator  
Collaborator: F Osis, Undergraduate  
Title: Behavioural and skeletal asymmetry in non-human primates.  
£1,500
- 2014-2016            **The Leakey Foundation: Senior Research Grant**  
Role: Principal Investigator  
Title: Reconstructing walking kinematics from femoral condyle curvature in  
fossil hominins.  
\$13,745
- 2014                    **The Carnegie Trust for the Universities of Scotland**  
Role: Principal Investigator  
Title: Primate walking: connecting skeletal shape and animal movement.  
£4,250
- 2014-2015            **University of Glasgow: Learning and Teaching Development Fund**  
Role: co-Principal Investigator  
Collaborators: R Mancy, co-PI; D Haydon D, PI  
Title: Development of an integrated curriculum in quantitative skills for  
biology: background work package.  
£6,900
- 2010-2011            **National Science Foundation: Division of Behavioral and Cognitive  
Sciences**  
Role: co-Principal Investigator  
Collaborators: BM Auerbach, PI for The University of Tennessee; K King,  
co-PI for SUNY-Oswego  
Title: Pelvic shape and differential mortality: obstetric variation among  
indigenous North American populations.  
Award Number: 0962752  
\$15,186

**PEER-REVIEWED PUBLICATIONS**

(\* *Graduate mentee*)

- In press* Ruff CB, **Sylvester AD**, Rahmawati N, Suriyanto RA, Paul S, Aubert M, Joannes-Boyau R, Berghuis H, Pop E, Batenburg KJ, Cobb S, Kostenko A, Noerwidi S, Renema W, Adhityatama S, Joordes J. Two Late Pleistocene human femora from Trinil, Indonesia: Implications for body size and behavior in Southeast Asia. *Journal of Human Evolution*.
- In press* Chu E, Stull KE, **Sylvester AD**. An alternative size variable for allometric investigations in subadults. *American Journal of Biological Anthropology*.
- 2022 Llera-Martin CJ\*, Rose KD, **Sylvester AD**. A morphometric analysis of early Eocene Euprimate tarsals from Gujarat, India. *Journal of Human Evolution*.
- 2022 Harper CM\*, Goldstein D\*, **Sylvester AD**. Comparing and combining sliding semilandmarks and weighted spherical harmonics for shape analysis. *Journal of Anatomy*.
- 2022 Kramer PA, Feuerriegel E, Lautzenheiser SG, **Sylvester AD**. Sensitivity of musculoskeletal models to variation in muscle architecture parameters. *Evolutionary Human Sciences*. 4. e6.
- 2021 Harper CM\*, Ruff CB, **Sylvester AD**. Calcaneal shape variation in human, nonhuman primates, and fossil hominins. *Journal of Human Evolution* 159. doi:10.1016/j.jhevol.2021.103050
- 2021 **Sylvester AD**, Lautzenheiser SG, Kramer PA. A review of musculoskeletal modelling of human locomotion. *Journal of the Royal Society Interface Focus* 11 (5): doi-org.proxy1.library.jhu.edu/10.1098/rsfs.2020.0060
- 2021 **Sylvester AD**, Lautzenheiser SG, Kramer PA. Muscle forces and the demands of human walking. *Biology Open* 10 (7): bio058595.
- 2021 Harper CM\*, Ruff CB, **Sylvester AD**. Scaling and relative size of the human, nonhuman ape, and baboon calcaneus. *The Anatomical Record*. doi.org/10.1002/ar.24642
- 2021 Zelazny K\*, **Sylvester AD**, Ruff CB. Bilateral asymmetry and developmental plasticity of the humerus in modern humans. *American Journal of Physical Anthropology* 174: 418-433.
- 2021 Harper CM\*, Ruff CB, **Sylvester AD**. Gorilla calcaneal morphological variation and ecological divergence. *American Journal of Physical Anthropology* 174: 49-65.
- 2021 Harper CM\*, **Sylvester AD**, McAfee RK, Cooke SB. A novel method for quantifying femoral neck anteversion: A case study with extinct sloths. *The Anatomical Record* 304: 266-278.

- 2020 Terhune CE, **Sylvester AD**, Scott JE, Ravosa MJ. 2020. Internal architecture of the mandibular condyle of rabbits is related to dietary resistance during growth. *Journal of Experimental Biology* 223 (7). *Cover Article*.
- 2020 Lautzenheiser SG, **Sylvester AD**, Kramer PA. Estimating the in vivo location of the talus from external surface landmarks. *American Journal of Physical Anthropology* 171: 354-360.
- 2018 DeSilva JM, Carlson KJ, Claxton AG, Harcourt-Smith WEH, McNutt EJ, **Sylvester AD**, Walker CS, Zipfel B, Churchill SE, Berger LR. The anatomy of the lower limb skeleton of *Australopithecus sediba*. *PaleoAnthropology* 2018: 357-405.
- 2018 Canington SL, **Sylvester AD**, Burgess ML, Junno J-A, Ruff CB. Long bone diaphyseal shape follows different ontogenetic trajectories in captive and wild gorillas. *American Journal of Physical Anthropology* 167: 366-376.
- 2018 Auerbach BM, King KA, Campbell RM, Campbell ML, **Sylvester AD**. Variation in obstetric dimensions of the human bony pelvis in relation to age-at-death and latitude. *American Journal of Physical Anthropology* 167: 628-643.
- 2018 Harper CM\*, **Sylvester AD**. Effective mechanical advantage allometry of felid elbow and knee extensors. *The Anatomical Record* 302: 775-784.
- 2018 **Sylvester AD**, Kramer PA. Young's modulus and load complexity: Modeling their effects on proximal femur strain. *The Anatomical Record* 301: 1189-1202.
- 2017 **Sylvester AD**, Terhune CE. Trabecular mapping: Leveraging geometric morphometrics for analyses of trabecular structure. *American Journal of Physical Anthropology* 163: 553-569.
- 2017 Auerbach BM, Gooding AF, Shaw CN, **Sylvester AD**. The relative position of the human fibula to the tibia influence cross-sectional properties of the tibia. *American Journal of Physical Anthropology* 163: 148-157.
- 2016 Reeves NM, Auerbach BM, **Sylvester AD**. Fluctuating and directional asymmetry in the long bones of captive cotton-top tamarins (*Saguinus oedipus*). *American Journal Physical Anthropology* 160: 41-51.
- 2015 **Sylvester AD**. Femoral condyle curvature is correlated with knee walking kinematics in ungulates. *The Anatomical Record* 298: 2039-2050.
- 2013 **Sylvester AD**. A geometric morphometric analysis of the hominid medial tibial condyle. *The Anatomical Record* 296: 1518-1525.
- 2013 Kramer PA, **Sylvester AD**. Humans, geometric similarity, and the Froude number: Is “reasonably close” really close enough? *Biology Open* 2: 111-120.

- 2012 **Sylvester AD**, Pfisterer T. Quantifying lateral femoral condyle ellipticalness in chimpanzees, gorillas, and humans. *American Journal of Physical Anthropology* 149: 458-467.
- 2011 Auerbach BM, **Sylvester AD**. Allometry and apparent paradoxes in human limb proportions: Implications for scaling factors. *American Journal of Physical Anthropology* 144: 382-391.
- 2011 **Sylvester AD**, Mahfouz MR, Kramer PA. The effective mechanical advantage of A.L. 129-1a for knee extension. *The Anatomical Record* 294: 1486-1499.
- 2011 Kramer PA, **Sylvester AD**. The energetic cost of walking: A comparison of predictive methods. *PLoS One* 6(e21290): 1-11.
- 2011 Burrows AM, Muldoon KM, **Sylvester AD**. New models and insights into primate evolutionary morphology. *Anatomy Research International* 1: 1-2.
- 2010 **Sylvester AD**, Garofalo E, Ruff CB. Technical Note: A R program for automating bone cross section reconstruction. *American Journal of Physical Anthropology* 142: 665-669.
- 2010 **Sylvester AD**, Organ JM. Curvature scaling in the medial tibial condyle of large bodied hominoids. *The Anatomical Record* 293:671-679.
- 2009 Kramer PA, **Sylvester AD**. Bipedal form and locomotor function: Understanding the effects of size and shape on velocity and energetics. *PaleoAnthropology*: 238-251.
- 2008 **Sylvester AD**, Kramer PA, Jungers WL. Humans are not (quite) isometric. *American Journal of Physical Anthropology* 137: 371-383.
- 2008 **Sylvester AD**, Merkl BC, Mahfouz MR. Assessing A.L. 288-1 femur length using computer-aided three-dimensional reconstruction. *Journal of Human Evolution* 55: 665-671.
- 2008 Christensen AM, **Sylvester AD**. Physical matches in bones, shells and teeth: A validation study. *Journal of Forensic Sciences* 53: 694-698.
- 2008 **Sylvester AD**, Kramer PA. Stand and Shuffle: When does it make energetic sense? *American Journal of Physical Anthropology* 135: 484-488.
- 2006 **Sylvester AD**, Christensen AM, Kramer PA. Factors influencing osteological changes in the hands and fingers of recreational rock climbers. *Journal of Anatomy* 209: 597-609. *Cover article.*
- 2006 **Sylvester AD**. 2006. Locomotor decoupling and the origin of hominin bipedalism. *Journal of Theoretical Biology* 242(3): 581-590.

## BOOK CHAPTERS

- 2019 Kramer PA, **Sylvester AD**, Hammerberg AG. 2019. Modeling the Spine Using Finite Element Models: Considerations and Cautions. In E Been, A Gómez-Olivencia, PA Kramer, eds. *Spinal Evolution: Morphology, Function, and Pathology of the Spine in Human Evolution*. Springer.

## CONFERENCE PRESENTATIONS

(\* *Graduate mentee*; \*\* *Undergraduate mentee*)

- 2022 Ruff CB, **Sylvester AD**, Rahmawati NT, Suriyanto RA, Storm P, Aubert M, Pop E, Batenburg J, Coban SB, Noerwidi S, Huffman OF, Renema W, Adhityatama S, Joordens JC. Comparative morphology of two Late Pleistocene human femora from Trinil, Indonesia. *American Journal of Biological Anthropology* S73: 156.
- 2022 Horbaly H, Hubbe M, **Sylvester AD**, Auerbach BM. Morphological variance of human joint articular surfaces. *American Journal of Biological Anthropology* S73: 85.
- 2022 **Sylvester AD**, Wescott DJ, Cunningham DL, Gleiber DS. Body mass and trabecular structure in the human talus. *American Journal of Biological Anthropology* S73: 177.
- 2022 Harper CM, Patel BA, **Sylvester AD**. Calcaneal trabecular variation among gorilla taxa. *American Journal of Biological Anthropology* S73: 79.
- 2022 **Sylvester AD**, Cunningham DL, Meckel L, Shi G, Zbijewski WB, Wescott DJ. Body mass estimation using bone micro- and macro-structure: a practical approach using CT imaging and computer analysis. *NIJ Research & Development Symposium. Meetings of the American Academy of Forensic Sciences*.
- 2021 Ryan K, **Sylvester AD**, Buck L, Auerbach BM. Variation and covariation of size and shape of sphenoidal sinus in *H. sapiens*. *The FASEB Journal* 35.
- 2021 Harper C\*, Ruff CB, **Sylvester AD**. Calcaneal allometry in humans and nonhuman primates. *The FASEB Journal* 35.
- 2021 Goldstein D\*, **Sylvester AD**. Carpal shape variation between Pan and Gorilla mirrors that of other mammals with similar body size differences. *The FASEB Journal* 35.
- 2020 Roach CS\*\*, Harper CM\*, Goldstein DB\*, **Sylvester AD**. A three-dimensional evaluation of chimpanzee subspecies talar morphology using spherical harmonics. *Accepted for the 2020 Meeting of the American Association of Physical Anthropologists Undergraduate Research Symposium*.

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- 2020 Huo VR\*\*, **Sylvester AD**, Harper CM\*. Mechanical advantage of the triceps surae muscle complex in modern humans. *Accepted* for the 2020 Meeting of the American Association of Physical Anthropologists Undergraduate Research Symposium.
- 2020 **Sylvester AD**, Lautzenheiser SG, Kramer PA. Estimating hip muscle forces during walking using musculoskeletal modeling. *American Journal of Physical Anthropology* S69: 278.
- 2020 Russell CK\*, Gleiber DS, Wescott DJ, Cunningham DL, **Sylvester AD**. Trabecular mapping: effects of intra- and inter-observer error on sliding semilandmark placement. *American Journal of Physical Anthropology* S69: 241.
- 2020 Harper CM\*, Ruff CB, **Sylvester AD**. Calcaneal external shape of Australopithecus sediba. *American Journal of Physical Anthropology* S69: 114.
- 2020 Goldstein DM\*, **Sylvester AD**. Reconstructing the A.L. 288-1 distal femur during virtual geometric methods. *American Journal of Physical Anthropology* S69: 103.
- 2020 Llera CJ\*, Rose KD, **Sylvester AD**. A morphometric analysis of Eocene primate astragali. *American Journal of Physical Anthropology* S69: 163.
- 2020 Lautzenheiser SG, **Sylvester AD**, Kramer PA. The influence of foot orientation on side foot forces during walking in a straight line. *American Journal of Physical Anthropology* S69: 156.
- 2020 Lautzenheiser SG, **Sylvester AD**, Kramer PA. The importance of mediolateral forces on foot rehabilitation after injury. *The FASEB Journal* 34.
- 2020 Harper CM\*, Ruff CB, **Sylvester AD**. Human calcaneal shape relative to activity and foraging levels. *The FASEB Journal* 34.
- 2020 Goldstein DM\*, Harper CM\*, **Sylvester AD**. A comparison of spherical harmonic and sliding landmark analyses as methods for three-dimensional shape evaluation. *The FASEB Journal* 34.
- 2020 Llera CJ\*, Rose KD, **Sylvester AD**. A morphometric analysis of early Eocene euprimate calcanei from Gujarat, India. *The FASEB Journal* 34.
- 2020 Mussell J, **Sylvester AD**. Anatomy for Every Body. *The FASEB Journal* 34.
- 2020 Kramer PA, Lautzenheiser SG, **Sylvester AD**. Hip joint and muscle forces in human walking. ASCE Engineering Mechanics Institute International Conference.
- 2019 Gleiber DS, Cunningham DL, Wescott DS, Russell CK\*, **Sylvester AD**. Investigating the effect of obesity in trabecular structure of the proximal tibia: traditional and sliding semilandmark methods. Tomography for Scientific Advancement (ToScA), North America Symposium, University of Florida.



- 2019 Zelazny KG\*, **Sylvester AD**, Ruff CB. Choice of size parameter alters interpretation of fossil hominin distal humeral morphology. *The FASEB Journal* 33: 612.9.
- 2019 Goldstein DM\*, **Sylvester AD**. Virtual geometric morphometric reconstruction of australopithecine femora: a methodological evaluation. *The FASEB Journal* 33: 612.12.
- 2019 Harper CM\*, **Sylvester AD**, McAfee RK, Cooke SB. Quantifying femoral neck torsion in extinct and extant sloths. *The FASEB Journal* 33: 614.1.
- 2019 Russell CK\*, Cunningham DL, Wescott DJ, Gleiber DS, **Sylvester AD**. Sensitivity of trabecular mapping to sliding semilandmark placement. *The FASEB Journal* 33: 612.13.
- 2019 Ochoa M, Lautzenheiser SG, **Sylvester AD**, Kramer PA. Anticipating turns: how many steps are affected? *American Journal of Physical Anthropology* S68: 179.
- 2019 Lautzenheiser SG, **Sylvester AD**, Kramer PA. Talar forces and moments in turning. *American Journal of Physical Anthropology* S68: 138.
- 2019 Harper CM\*, Ruff CB, **Sylvester AD**. Interspecific variation of calcaneal morphology in gorillas. *American Journal of Physical Anthropology* S68: 98.
- 2018 Harper CM\*, **Sylvester AD**. Allometry of felid knee and elbow effective mechanical advantage. *The FASEB Journal* 32: 780.21.
- 2018 Zelazny KG\*, **Sylvester AD**, Ruff CB. Difference between human and great ape distal humeral articular axes. *The FASEB Journal* 32: 364.5.
- 2018 Canington SL, Ruff CB, **Sylvester AD**, Dunn RH, Rose KD. Reconstructing locomotor behaviors: Cross-sectional property analysis brings more to the story of how earliest Euprimates moved. *The FASEB Journal* 32: 780.17.
- 2018 **Sylvester AD**, Cosgarea AJ, Tanaka MJ. Patellar maltracking and the hominin distal femur. *American Journal of Physical Anthropology* S66: 270.
- 2018 Zelazny KG\*, **Sylvester AD**, Ruff CB. Morphological variation in the distal humerus of modern humans, apes and fossil hominins. *American Journal of Physical Anthropology* S66: 312.
- 2018 Kramer PA, **Sylvester AD**. Hominin proximal femur morphology: three-dimensional finite element analysis of femoral neck strain. *American Journal of Physical Anthropology* S66: 146.
- 2018 Gooding AF, **Sylvester AD**, Auerbach BM. Age-related changes in the structural properties of the human tibia. *American Journal of Physical Anthropology* S66: 103.

AD SYLVESTER – CV

- 2018 Buti L, Reilly KM, **Sylvester AD**, Benazzi S, Feeney RNM. Enamel thickness variation in human molars and its importance for the practice of interproximal reduction. *American Journal of Physical Anthropology* S66: 38.
- 2017 Ramos PA, **Sylvester AD**, Taylor AB, Terhune CE. Trabecular symmetry in the primate temporomandibular joint. *American Journal of Physical Anthropology* S64: 326.
- 2017 Cannington SL, **Sylvester AD**, Burgess ML, Junno J, Ruff CB. Long bone cross-sectional diaphyseal shape follows different ontogenetic trajectories in captive and wild gorillas. *American Journal of Physical Anthropology* S64: 136-137.
- 2017 Terhune CE, **Sylvester AD**, Coiner-Collier S, Scott JE, McAbee KR, Ravosa, MJ. Adaptive plasticity in the masticatory apparatus: inferences for form, function and fossils. *American Journal of Physical Anthropology* S64: 379.
- 2017 **Sylvester AD**. Primate femoral condyle curvature: linking shape and locomotion. *American Journal of Physical Anthropology* S64: 375.
- 2017 Lautzenheiser SG, **Sylvester AD**, Kramer PA. Does shape of the talus predict first metatarsal abduction? *American Journal of Physical Anthropology* S64: 257-258.
- 2016 Squyres N\*, **Sylvester AD**, Ruff CB. Shape variation in the Distal Femur of Modern Humans and Hominins. *American Journal of Physical Anthropology* S62: 300.
- 2016 **Sylvester AD**, Terhune CE, Taylor AB. Trabecular mapping: Leveraging sliding landmarks for analyses of bone microstructure. *American Journal of Physical Anthropology* S62: 309.
- 2016 Curran SC, **Sylvester AD**, Terhune C, Gogol S, Hubbard J. New ecomorphological proxies for paleohabitat reconstructions: Geometric morphometric analyses of cervid joint surface morphology. Annual Meeting of the Paleoanthropology Society.
- 2016 **Sylvester AD**. 2016. Trabecular mapping of the human distal femur: Leveraging geometric morphometrics for studies of bone microstructure. *The FASEB Journal* 30: 1037.2.
- 2015 Squyres N\*, **Sylvester AD**, Ruff CB. 2015. Morphological variation in the distal femur of three modern human populations. *The FASEB Journal* 29: 866.5.
- 2015 Tyas C\*\*, **Sylvester AD**. 2015. Assessing shape asymmetry in human femora and humeri. *The FASEB Journal* 29: LB25.
- 2015 Harris E\*\*, **Sylvester AD**. Femoral condyle curvature and the Chondral Modeling theory. *The FASEB Journal* 29: LB24.
- 2015 Bryce A\*\*, Terhune C, **Sylvester AD**. User variance in defining the trabecular-cortical interface using micro-CT images. *The FASEB Journal* 29: LB23.

- 2015 **Sylvester AD**, DeSilva JM, Churchill SE, Berger LR. Three-dimensional shape analysis of the distal femur of *Australopithecus sediba*. *American Journal of Physical Anthropology* S60: 299-300.
- 2013 **Sylvester AD**. Femoral condyle curvature and walking midstance in mammals. *Folia primatologica* 84: 327.
- 2013 **Sylvester AD**. Reconstructing australopithecine midstance using femoral condyle curvature. *American Journal of Physical Anthropology* S56:268.
- 2012 Ouchida M, **Sylvester AD**, Kramer PA. Using musculoskeletal simulations to model the cost of locomotion: the OpenSim experiment. *American Journal of Physical Anthropology* S54: 230.
- 2012 **Sylvester AD**, D’Août K, Kramer PA. GRF moment arms about the knee in A.L. 288-1. *American Journal of Physical Anthropology* S54: 281.
- 2012 **Sylvester AD**. Quantifying the ellipticalness of the lateral femoral condyle in Gorilla, Pan, and Homo. *The FASEB Journal* 26:723.9.
- 2011 Campbell ML, Campbell RM, Auerbach BM, King KA, **Sylvester AD**. Survival is in the balance? Asymmetry in obstetric dimensions and mortality. *American Journal of Physical Anthropology* S52: 102.
- 2011 Campbell RM, Campbell ML, **Sylvester AD**, Auerbach BM, King KA. Quantifying a twisted curve: 3D digitization of sciatic notch shape using a microscribe. *American Journal of Physical Anthropology* S52: 102.
- 2011 Feeney RNM, **Sylvester AD**, Hublin JJ. Dental tissue allometry in modern human males and females. *American Journal of Physical Anthropology* S52: 134.
- 2011 King KA, Auerbach BM, **Sylvester AD**, Campbell ML, Campbell RM. Death and the (narrow) maiden: pelvic dimensions, mortality, and obstetric versus thermoregulation. *American Journal of Physical Anthropology* S52: 186.
- 2011 Reeves NK, **Sylvester AD**, Auerbach BM. Behavioral laterality and skeletal directional asymmetry in cottontop tamarins. *American Journal of Physical Anthropology* S52: 251.
- 2011 **Sylvester AD**, Auerbach BM. Obscuring limb allometry: The geometric mean and limb indices. *American Journal of Physical Anthropology* S52: 288.
- 2011 Reeves N, **Sylvester AD**, Auerbach BM. Patterns of asymmetry in primate long bone dimensions: a widespread pattern? *The FASEB Journal* 25:188.1.
- 2010 **Sylvester AD**. Asymmetry in *Saguinus oedipus* limb bone dimension. *American Journal of Physical Anthropology* S50: 227.

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- 2010 **Sylvester AD**. Proximal tibia shape and locomotion. *The FASEB Journal* 24:171.1.
- 2009 **Sylvester AD**, Mahfouz MR. Quantifying relative shape variation in modern human femora and humeri. *The FASEB Journal* 23:648.4.
- 2009 **Sylvester AD**, Kramer PA. Predicting the metabolic energy consumption of human walking with mechanical energy calculations. *American Journal of Physical Anthropology* S48: 252.
- 2009 Garofalo EM, **Sylvester AD**. A R program for automating bone cross-section reconstruction. *American Journal of Physical Anthropology* S48: 131-132.
- 2008 **Sylvester AD**, Mahfouz MR. The effective mechanical advantage of the australopithecine knee. *American Journal of Physical Anthropology* S46: 203.
- 2008 Kramer PA, **Sylvester AD**. Humans, geometric similarity and the Froude number: Is “reasonably close” really close enough? *American Journal of Physical Anthropology* S46: 134.
- 2008 Hendrix RB, **Sylvester AD**. The truth, the whole truth, and nothing but the truth – so help me Darwin: Legal decisions and evolution on the classroom. *American Journal of Physical Anthropology* S46: 115.
- 2007 **Sylvester AD**, Merkl BC, Mahfouz MR. Reconstructing the A.L. 288-1 femur using three-dimensional computer models. *American Journal of Physical Anthropology* S44:228.
- 2007 Merkl BC, **Sylvester AD**, Mahfouz MR. A three-dimensional shape comparison of A.L. 129-1a and modern human distal femora. *American Journal of Physical Anthropology* S44:171.
- 2007 Mendenall MC, **Sylvester AD**, Kramer PA. Walking energetics and leg length: Are modern humans geometrically similar? *American Journal of Physical Anthropology* S44:170.
- 2007 Kramer PA, Mendenall MC, **Sylvester AD**. Geometric similarity in primates as assessed from long bone length. *American Journal of Physical Anthropology* S44:147.
- 2007 Christensen AM, **Sylvester AD**. Physical matches of bone, shell and teeth. A validation study. Presented at the American Academy of Forensic Sciences 59th Annual Scientific Meeting, San Antonio, Texas.
- 2006 Moore MK, **Sylvester AD**, Merkl BC, Kuhn MJ, Mahfouz MR. Creating a statistical atlas of the femur from three-dimensional CT data. *American Journal of Physical Anthropology* S42: 134.
- 2005 **Sylvester AD**. Decoupling the shoulders from above-substrate locomotion: a new idea for the origin of hominid bipedalism. *American Journal of Physical Anthropology* S40: 202.

## AD SYLVESTER – CV

- 2005 Christensen AM, **Sylvester AD**, Kramer PA, Lubke GH. Factors influencing osteological changes in the hands of rock climbers. *American Journal of Physical Anthropology* S40: 88.
- 2005 **Sylvester AD**. The Decoupling Hypothesis: A new idea for the origin of hominin bipedalism. Abstracts of the PaleoAnthropology Society 2005 Meetings: A25.
- 2004 **Sylvester AD**. Geometric modeling of the center of gravity in Pan troglodytes. *American Journal of Physical Anthropology* S38: 192.
- 2001 **Sylvester AD**. Surface area proportions, articular curvature, and the locomotor repertoire of A.L. 288-1. *American Journal of Physical Anthropology* S32: 146-147.

## MEDIA RELEASES & INTERVIEWS

- 2021 “Musculoskeletal modeling for the evolutionary biologist: A Primer”  
<https://www.youtube.com/watch?v=c3DtQGWaFnA&t=10s>
- 2019 Savage Love Letter of the Day, July 19, 2019:  
<https://www.thestranger.com/slog/2019/07/19/40763814/reader-advice-roundup-dan-blew-so-many-answers-this-week>
- 2016 “Adam Sylvester on Bones, Movement and Rock Climbing” Article in JHUSOM Fundamentals Newsletter. Interviewed by Catherine Gara.
- 2012 “Das Geheimnis des aufrechten Gangs” [The Secret of Upright Gait]. Interview for X:enius television program by Arte television network (Germany). Documentary about the evolution of human bipedalism.
- 2008 ScienceDaily. “Did walking on two feet begin with a shuffle?” Media coverage of article exploring energetic model for evolution of human bipedalism.
- 2006 “Does climbing guard against arthritis?” Article in *Climbing* magazine by Matt Samet.

## RESEARCH EXPERIENCE

- 2016                      Field Museum, Chicago  
Data collection on primate postcranial skeletons
- 2012                      Museum für Naturkunde, Berlin, Germany  
Data collection on primate postcranial skeletons
- 2011, 2004              National Museum of Natural History, Washington, D.C.  
Data collection on primate postcranial skeletons

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- 2010 Ditsong National Museum of Natural History, Pretoria, South Africa  
High-resolution CT scans of South African hominin fossils
- 2005, 2011 William M. Bass Skeletal Collection, University of Tennessee  
Computed tomography of 400+ modern human skeletons
- 1998, 2004 Cleveland Museum of Natural History, Cleveland, OH  
Data collection on primate postcranial skeletons

### **FIELD EXPERIENCE**

- 2008 Eocene mammals in the Big Horn Basin, WY
- 1999 Historic archaeology at Ramsey House, Knoxville, TN

### **RESEARCH FOCUS**

Keywords: Paleoanthropology, Biomechanics, Human Gait, Image Analysis, Bone Functional Adaptation, Primate Locomotion, Geometric Morphometrics, Trabecular Bone Analysis, Quantitative Methods, 3D Imaging

### **TEACHING EXPERIENCE**

#### **Johns Hopkins University School of Medicine**

Scientific Foundations of Medicine: Human Anatomy (2015-present) 1<sup>st</sup> year medical students; Lecturer and laboratory instructor

Summer Anatomy: A course for graduate and undergraduate students (2015-2019)  
Diverse group of students; Lecturer and laboratory instructor

Foundations in Human Anatomy (2020-present) Doctor of Nursing Practice students in nurse anesthesia program; Lecturer and laboratory instructor

Geometric Morphometrics (2016, 2018, 2020, 2022) Graduate course in the statistical analysis of biological shape; Instructor

Biomechanics of the Skeleton (2021) Graduate course in application of Newtonian and solid continuum mechanics to skeletal function; Instructor

**Johns Hopkins University, Department of Biology**

Human Anatomy (2017, 2019) Undergraduate course; Lecturer

**University of Glasgow, College of Medical, Veterinary & Life Sciences**

Human Form and Function (2013-2015) Undergraduate course; Lecturer

Integrated Human (2013-2015) Undergraduate course; Lecturer

Anatomy 3 (2013-2015) Statistics and biomechanics modules, tutorials; Undergraduate course; Lecturer

Cells and Tissues (2013-2015) Skin and glands modules; Undergraduate course; Lecturer

Articulation Biomechanics (2015) Undergraduate course; Course coordinator / lecturer

Dental Anatomy (2014) Oral and Nasal cavity modules; Dental students; Lecturer

**The Leipzig School of Human Origins: Max Planck Institute for Evolutionary Anthropology**

Gorilla Musculoskeletal Anatomy (2009) Graduate dissection course; Lecturer and laboratory instructor

**Johns Hopkins University School of Medicine**

Scientific Foundations of Medicine: Human Anatomy (2007-2009) 1<sup>st</sup> year medical students; Lecturer and laboratory instructor

Introduction to Computer Programming (2009) Graduate course; Instructor

Biomechanics of Primate Locomotion (2009) Graduate course; Instructor

**The University of Tennessee, Knoxville, Department of Mechanical, Aerospace, and Biomedical Engineering**

Human Gross Anatomy (2007) Lecturer and laboratory instructor

**The University of Tennessee, Knoxville, Department of Anthropology**

Human Osteology (2000) Laboratory instructor [volunteer]

Human Origins, Laboratory (2001, 2002) Undergraduate course; Graduate teaching assistant; Laboratory instructor

## AD SYLVESTER – CV

Human Origins, Laboratory (2003) Undergraduate course; Head graduate teaching assistant; Laboratory instructor

Human Origins (2004, 2005) Undergraduate course; Graduate teaching associate (Instructor of record)

Human Paleontology (2004) Undergraduate/graduate course; Graduate teaching assistant; Laboratory instructor

### INVITED LECTURES

- 2022 “Simulating the Past: Musculoskeletal Modeling in Paleoanthropology”, Center for Anatomical Sciences, University of North Texas Health Science Center
- 2022 “Leveraging Musculoskeletal Modeling for Paleobiomechanics” Neuromechanics Research Core, Department of Kinesiology, University of Maryland
- 2022 Invited: Title TBD. Department of Anthropology, Dartmouth College. Hanover, NH.
- 2021 “Musculoskeletal modeling for evolutionary biologists: A primer” AnyBody Technology. Aalborg, Denmark *Virtual*
- 2021 “Forensic Application of Bone Functional Adaptation” Osteology Guest Lecturer, Dartmouth College *Virtual*
- 2020 “Something to chew on: bone response to dietary manipulations in rabbits” Department of Anthropology, The University of Tennessee, Knoxville, TN
- 2018 “Virtual Paleontology: Computation Approaches to Locomotor Evolution” Department of Anthropology, The University of Tennessee, Knoxville, TN
- 2018 “Virtual Orthopaedics: Computational Approaches to Joint Disorders” Ross University School of Medicine, Knoxville, TN
- 2017 “Beyond the VOI: Analyzing patterns of trabecular structure” Department of Anthropology, Texas State University, San Marcos, TX
- 2016 “Unlocking the knee of *Australopithecus sediba*” Department of Anthropology, The University of Tennessee, Knoxville, TN
- 2015 “Femoral condyle curvature and mammalian walking” Paleobiology Group, University of Washington, Seattle, WA
- 2012 “Australopiths did not use a ‘bent-hip and bent-knee’ gait” Department of Anthropology, The University of Tennessee, Knoxville, TN



## AD SYLVESTER – CV

- 2011 “The effective mechanical advantage of australopithecine knee extension” Institute for Systematic Zoology and Evolution, Friedrich-Schiller University, Jena, Germany
- 2010 “Does size matter in hominin locomotion?” Department of Anthropology, The University of Tennessee, Knoxville TN

### **DIVERSITY, EQUITY AND INCLUSION**

- 2018-Present **Anatomy for Every Body**  
Anatomy outreach targeted to high school students, their parents and teachers from groups underrepresented in STEM fields.  
Recruit and support junior faculty and graduate students from underrepresented backgrounds within the membership of American Association for Anatomy to provide the outreach content.  
New Orleans, LA Event Jan. 2020.  
Planned and future events delayed due to Covid-19 pandemic.

### **Training**

- 2022 Reframing Disability and Promoting Equity in Higher Education  
Leader: Amanda Kraus, Ph.D., University of Arizona
- 2020 Holistic Review in Graduate Admissions  
Leader: Julia Kent, Ph.D., Vice President, Best Practices and Strategic Initiatives, Council of Graduate Schools

### **TRAINEES & STUDENTS ADVISED**

#### **Postdoctoral Fellows**

- 2021-Present Allison Machnicki, Ph.D., Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2021-2022 Lauren Meckel, Ph.D., Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine [NIJ Funded]
- 2020-2021 Christine M. Harper, Ph.D., Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine

#### **Doctoral Student Committee Chair**

- 2021-Present Kailie Batsche, Dissertation (Untitled). Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine

## AD SYLVESTER – CV

- 2017-Present Catherine J. Llera-Martin, Dissertation (Untitled). Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine  
NSF GRFP Recipient (\$138,000)
- 2017-Present C. Kinley Russell, Dissertation (Untitled). Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2016-2022 Deanna M. Goldstein, Ph.D. Dissertation “External and Internal Morphology of Knuckle-walking Apes among mammals”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine  
Leakey Foundation Grant Recipient (\$7,003)  
Current Position: Research Instructor, Renaissance School of Medicine at Stony Brook University.
- 2015-2020 Christine M. Harper, Ph.D. Dissertation “External Morphological Variation of Extant and Fossil Hominid Calcanei”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine.  
NSF DDRIG Recipient (\$31,431)  
Current Position: Assistant Professor, Cooper Medical School of Rowan University.

### **Doctoral Student Committee Member**

- Current Greg Wehrman, Dissertation (Untitled). Department of Anthropology, The University of Tennessee, Knoxville
- Current Stephanie Canington, Dissertation (Untitled). Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- Current Devora S. Gleiber, Dissertation (Untitled). Department of Anthropology, Texas State University, San Marcos
- Current Shelby Garza, Dissertation (Untitled). Department of Anthropology, Texas State University, San Marcos
- Current Elaine Chu, Dissertation (Untitled). Department of Anthropology, University of Nevada, Reno
- Current Yi-Chieh Huang, Dissertation (Untitled). Center for Functional Anatomy and Evolution, The Hopkins University School of Medicine, Baltimore, MD
- 2022 Haley Horbaly, Ph.D. Dissertation “Articular Morphology in Human Limb Synovial Joints: Variation, Covariation, and Application”. Department of Anthropology, The University of Tennessee, Knoxville

## AD SYLVESTER – CV

- 2022 Katharine Ryan, Ph.D. Dissertation “Sphenoidal Sinuses and Spherical Harmonics: Variation and Covariation of the Most Morphologically Diverse and Least Understood Paranasal Sinus”. Department of Anthropology, The University of Tennessee, Knoxville
- 2019 Anthony Harper, Ph.D. Dissertation “Craniodental adaptation and homoplasy in early mammals”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine, Baltimore, MD
- 2019 Steven G. Lautzenheiser, Ph.D. Dissertation “Change in direction: forces on the human talus”. Department of Anthropology, University of Washington, Seattle, WA
- 2018 M. Loring Burgess, Ph.D. Dissertation “Ontogenetic Changes in Limb Bone Structural Properties and Locomotor Behavior in Pan”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine, Baltimore, MD
- 2016 Nicole Squyres, Ph.D. Dissertation “Shape variation in the distal femur of modern humans and fossil hominins”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine, Baltimore, MD
- 2012 François H.D. Gould, Ph.D. Dissertation “The morphology of the distal femoral articular surface and the evolution of cursoriality in ungulates”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine, Baltimore, MD

### **Masters Students**

- Present Kurt Esenwein, M.A. Thesis “Reconstruction of AL 288-1 Pelvis Using 3D Models”. Medical Illustration, The Johns Hopkins University School of Medicine, Baltimore, MD
- 2019 Rachel Frigot, M.S. Thesis “Morphological Variation in the Avian Pelvis”. Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine, Baltimore, MD
- 2014 Lori Christie, M.Sc. Thesis “3D PDF of Lower Limb Musculoskeletal Anatomy”, Medical Visualization and Human Anatomy, University of Glasgow, Glasgow, UK

### **Undergraduate Students**

- 2020 Caley Roach, B.S., Behavioral Biology, The Johns Hopkins University; undergraduate researcher

## AD SYLVESTER – CV

- 2020 Evan Wang, B.S., Molecular and Cellular Biology, The Johns Hopkins University; undergraduate researcher
- 2020 Vincent Hou, B.S., Molecular and Cellular Biology, The Johns Hopkins University; undergraduate researcher
- 2015 Benjamin Ramsey, B.S., Biomedical Engineering, The Johns Hopkins University; undergraduate researcher
- 2015 Caitlin Tyas, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor
- 2015 Amy Bryce, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor
- 2015 Emma Harris, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor
- 2015 Laura Williamson, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor
- 2014 Anne Walsh, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor
- 2014 Mhairi Charlton, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor
- 2014 Cameron Morrice, B.Sc. Anatomy Honours, University of Glasgow; primary thesis advisor

## EDUCATIONAL FOCUS

Keywords: Human Gross Anatomy, Paleoanthropology, Geometric Morphometrics, Biomechanics, Functional Morphology, Quantitative Methods

## PROFESSIONAL SERVICE

### Departmental and Institutional Service

- 2022 Member, Search Committee for two faculty hires, Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine

AD SYLVESTER – CV

- 2021 Ph.D. Program Review; Representative for the Center for Functional Anatomy and Evolution to the Doctor of Philosophy Board, The Johns Hopkins University
- 2021 Complete revision of Graduate Student Handbook, Ph.D. in Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2021 Member, Search Committee for senior faculty hire [Director], Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2020 Chair, Research Re-Entry Committee, Covid-19 Pandemic, Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2019-Present Member, MA/Ph.D. Committee, The Johns Hopkins University School of Medicine
- 2019-Present Chair, Graduate Admissions Committee, Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2016-2019 Seminar Speaker Series Organizer, Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2016-2019 Member, Graduate Admissions Committee, Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2015 Member, Search Committee for two faculty hires, Center for Functional Anatomy and Evolution, The Johns Hopkins University School of Medicine
- 2014-2015 Board Member, College Ethics Committee, College of Medical, Veterinary and Life Sciences, University of Glasgow (Equivalent to U.S. Institutional Review Board)
- 2004-2005 Graduate Student Representative to the Faculty: Department of Anthropology, The University of Tennessee
- 2001-2006 Docent: McClung Museum Education Program, Knoxville, TN. The Origins of Humanity: Searching for Our Fossil Ancestors

### **Professional Organization Service**

- 2020 Local Planning Committee: 90th Meeting of the American Association of Physical [Biological] Anthropologists, Baltimore, MD. *Reschedule for 2025*
- 2013 Chair: Paleoanthropology Poster Symposium at the 82<sup>nd</sup> Meeting of the American Association of Physical Anthropologists, Knoxville, TN
- 2011 Organizer: Biological Anthropology Symposium at the Meeting of American Association of Anatomists in Washington, D.C.
- 2008 Co-organizer: Teaching Evolution & Promoting Quality Science Education Symposium at the 77<sup>th</sup> Meeting of American Association of Physical Anthropologists, Columbus, OH

### **REVIEWER**

#### **Editorial Board**

- 2011 Guest Editor, special issue of *Anatomy Research International: New Models and Insights into Primate Evolutionary Morphology*

#### **Manuscript Reviewer**

Acta Ecologica Sinica  
American Journal of Physical Anthropology  
Anatomical Record  
Animals  
Clinical Anatomy  
Cogent Medicine  
Current Biology  
International Biomechanics  
International Journal of Paleopathology  
Journal of Anatomy  
Journal of Forensic Sciences  
Journal of Human Evolution  
Journal of Theoretical Biology  
Journal of Vertebrate Paleontology  
Naturwissenschaften  
Public Library of Science (PLOS ONE)  
Physiology and Behavior  
Scientific Reports – Nature

**Grant Reviewer**

The Leakey Foundation  
National Science Foundation

**Grant Review Panel**

National Science Foundation Behavioral and Cognitive Sciences (Three times)

**CONSULTING EXPERIENCE**

2005                      Consultant: Zimmer Orthopedics

**PROFESSIONAL MEMBERSHIPS**

2000-Present            American Association of Biological Anthropologists  
2008-Present            American Association for Anatomy

**TECHNOLOGY TRANSFER**

2010                      Freeware: R programs for reconstructing long bone cross-sections and  
calculating cross-sectional properties  
Available at: [fae.johnshopkins.edu/chris-ruff/](http://fae.johnshopkins.edu/chris-ruff/)

**AWARDS AND HONORS**

2015                      Honourable Mention: Most Innovated Teacher, University of Glasgow  
Student Teaching Awards  
2005                      Graduate Student Travel Award, Department of Anthropology  
The University of Tennessee  
1995                      Phi Beta Kappa, Epsilon Chapter, The University of Tennessee, Knoxville