

Nathan E. Thompson

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Education

- 2016 Ph.D. Anatomical Sciences, Stony Brook University Medicine, NY.
Dissertation: *The Evolution of Upper Body Stability in Hominins*.
Advisor: Dr. Susan G. Larson
- 2013 M.S. Biomedical Sciences, Stony Brook University Medicine, NY.
Preliminary Exam Topics: *Anatomy, Embryology, Human Evolution*
- 2009 B.S. Engineering (dual major Anthropology), Washington University in St. Louis, MO.
Magna Cum Laude.

Academic Appointments

- 2021 – Present Research Associate – American Museum of Natural History, New York
- 2017 – Present Faculty Associate – Center for Global Health, College of Osteopathic Medicine, New York Institute of Technology
- 2016 – Present Associate Professor of Anatomy – Department of Anatomy, College of Osteopathic Medicine, New York Institute of Technology
- 2018 – 2021 Visiting Scientist – American Museum of Natural History, New York
- 2011 – 2016 Graduate Teaching Assistant – The Body, Medical Gross Anatomy (HBA 531), Stony Brook University School of Medicine
- 2010 – 2015 Research Assistant – Primate Locomotion Laboratory, Integrated Modeling and Experimental Assessment of Chimpanzee and Hominin Locomotion, Stony Brook University
- 2014 – 2015 Instructor/Course Director – Women in the Laboratory: Rocks, Fossils and the Biology of Ancient Life (WSE 187), Stony Brook University
- 2013 – 2015 Instructor – Anatomy Core Course for Dental Residents, Stony Brook University School of Dental Medicine

Publications

(#denotes student co-author; *denotes equal contribution)

- In review McNutt EJ, Hatala KG, Miller C, Casana J, Deane AS, Dominy N, Fabian K, Fannin LD, Gill SV, Gurtu J, Gustafson E, Hill AC, Johnson C, Kallindo S, Kilham B, Kilham P, Kim E, Liukus-Pierce C, Maley B, Prabhat A, Reader J, Rubin S, **Thompson NE**, Williams EM,

- Thornburg R, Zimmer B, Musiba C, DeSilva JM. Footprint evidence for early hominin locomotor diversity—Laetoli, Tanzania. *Nature*. Submitted Mar 25, 2021, Reviews received May 11, 2021, resubmitted July 26, 2021.
- In revision O’Neill MC, Demes B, **Thompson NE**, Larson SG, Stern J T Jr, Umberger BR. Adaptations for bipedal walking: musculoskeletal structure and three-dimensional joint mechanics of humans and bipedal chimpanzees. *Journal of Human Evolution*. Submitted Feb 27, 2021.
- In press ****Gecelter R, **Ilyaguyeva Y, Thompson NE**. The menisci are not shock absorbers: a biomechanical and evolutionary perspective. *Anatomical Record*. Accepted July 29, 2021.
- 2021 **Thompson NE**, #Rubinstein D, #Parrella-O’Donnell W, #Brett M, Demes B, Larson SG, O’Neill MC. The loss of the ‘pelvic step’ in human evolution. *Journal of Experimental Biology*. 224:jeb240440. doi: 10.1242/jeb.240440
Dryad data at: 10.5061/dryad.0p2ngf21x
- 2021 Almécija S, Hammond AS, **Thompson NE**, Pugh KD, Moyà-Solà S, Alba DM. Fossil apes in human evolution. *Science*. 372(6542):eabb4643. doi: 10.1126/science.abb4363
- 2020 **Thompson NE**. Skeletal anatomy of the newborn primate [Book Review]. *The Quarterly Review of Biology*. 95(4):343-344. doi: 10.1086/711774
- 2020 **Thompson NE**. The biomechanics of knuckle-walking: 3-D kinematics of the chimpanzee and macaque wrist, hand, and fingers. *Journal of Experimental Biology*. 223:jeb224360. doi: 10.1242/jeb.224360
- 2020 **Thompson NE**, #Ahmed L, #Celebi TB, #Coopee ZS, #Koll N, #Rubinstein D, Saunders MA, Anemone RL. Digitization of the Nissen-Riesen Chimpanzee Radiological Growth Series. *Evolutionary Anthropology*. 29(4):173–179. doi: 10.1002/EVAN.21836
www.morphosource.org/Detail/ProjectDetail/Show/project_id/414/s/n/t/s/f/t
- 2020 #Kikel M, #Gecelter R, **Thompson NE**. Is step width decoupled from pelvic motion in human evolution? *Scientific Reports*. 10:7806. doi: 10.1038/s41598-020-64799-3
- 2020 Grider-Potter N, Nalley T, **Thompson NE**, Goto R, Nakano Y. Influences of passive intervertebral range of motion on cervical vertebral form. *American Journal of Physical Anthropology*. 172(2):300–313. doi: 10.1002/ajpa.24044
- 2019 Gibbons D, **Thompson NE**. PIM-Tool: Pressure Image Manipulation Tool. *GitHub Software Release*. <https://github.com/degibbons/PIM-Tool> doi: 10.5281/zenodo.3895262 (doi assigned 2020)
- 2018 **Thompson NE**, #Rubinstein D, Larson SG. Great ape thorax and shoulder configuration—an adaption for arboreality or knuckle-walking? *Journal of Human Evolution*. 125:15–26. doi: 10.1016/j.hevol.2018.09.005
- 2018 **Thompson NE**, Demes B, Holowka, NB, O’Neill MC. Step width and frontal plane trunk motion in bipedal chimpanzee and human walking. *Journal of Human Evolution*. 125:27–37. doi: 10.1016/j.hevol.2018.09.006
- 2018 O’Neill MC, Demes B, **Thompson NE**, Umberger BR. Three-dimensional kinematics and the origin of the hominin walking stride. *Journal of the Royal Society Interface*. 15:20180205. doi: 10.1098/rsif.2018.0205
- 2018 **Thompson NE**, #Ostrowsky KR, McFarlin SC, Robbins MM, Stoinski TA, Almécija, S. Unexpected terrestrial hand posture diversity in wild mountain gorillas. *American Journal of Physical Anthropology*. 166(1):84–94. doi: 10.1002/ajpa.23404

- 2017 **Thompson NE**, Almécija S. The evolution of vertebral formulae in Hominoidea. *Journal of Human Evolution*. 110:18–36. doi: 10.1016/j.jhevol.2017.05.012
- 2017 Holowka NB, O'Neill MC, **Thompson NE**, Demes B. Chimpanzee ankle and foot joint kinematics: Arboreal versus terrestrial locomotion. *American Journal of Physical Anthropology*. 164(1):131–147. doi: 10.1002/ajpa.23262
- 2017 Holowka NB, O'Neill MC, **Thompson NE**, Demes B. Chimpanzee and human midfoot motion during bipedal walking and the evolution of the longitudinal arch of the foot. *Journal of Human Evolution*. 104:23–31. doi: 10.1016/j.jhevol.2016.12.002
- 2015 **Thompson NE**, Demes B, O'Neill MC, Holowka NB, Larson SG. Surprising trunk rotational capabilities in chimpanzees and implications for bipedal walking proficiency in early hominins. *Nature Communications*. 6:8416. doi: 10.1038/ncomms9416
- 2015 O'Neill MC, Lee LF, Demes B, **Thompson NE**, Larson SG, Stern JT Jr., Umberger BR. Three-dimensional kinematics of the pelvis and hind limbs in chimpanzee (*Pan troglodytes*) and human bipedal walking. *Journal of Human Evolution* 86: 32–42. doi: 10.1016/j.jhevol.2015.05.012
- 2015 Perlman RF, de Vries D, Jacobs RL, Holowka NB, Pain EL, **Thompson NE**, Guevara EE. The gateway to anthropology in St. Louis. *Evolutionary Anthropology* 24(3): 101–103. doi: 10.1002/evan.21450
- 2015 Demes B, **Thompson NE**, O'Neill MC, Umberger BR. Center of mass mechanics of chimpanzee bipedal walking. *American Journal of Physical Anthropology* 156(3): 422–433. doi: 10.1002/ajpa.22667
- 2014 **Thompson NE**, Holowka NB, O'Neill MC, Larson SG. Brief communication: Cineradiographic analysis of the chimpanzee (*Pan troglodytes*) talonavicular and calcaneocuboid joints. *American Journal of Physical Anthropology* 154(4): 604–608. doi: 10.1002/ajpa.22529
- 2014 **Thompson NE**, Cassalet S, Holowka NB, Perlman RF, Mongle C. Anthropology stampede in Calgary. *Evolutionary Anthropology* 23(3): 85–87. doi: 10.1002/evan.21415
- 2014 **Thompson NE**. Anthropology in comparative biology. *Evolutionary Anthropology* 23(2): 49. doi: 10.1002/evan.21406
- 2013 Patel BA, Horner AM, **Thompson NE**, Barrett L, Henzi SP. Ontogenetic scaling of fore- and hindlimb posture in wild Chacma baboons (*Papio hamadryas ursinus*). PLoS ONE 8(7): e71020. doi: 10.1371/journal.pone.0071020
- 2013 Maiolino SA, Pain E, Perlman R, Nesbitt A, **Thompson NE**. Chasing monkeys and finding fossils under the sunsphere. *Evolutionary Anthropology* 22(4): 161–163. doi: 10.1002/evan.21363

Conference Presentations and Associated Abstracts

(*denotes invited symposium; #denotes student co-author)

- 2021 Holowka NB, Bhandal V, Lam O, O'Neill MC, **Thompson NE**, Demes B. Chimpanzee foot strike forces and the evolution of the human heel strike. *American Journal of Physical Anthropology*, 174(S71): 48. doi: 10.1002/ajpa.24262

- 2021 **Thompson NE**, #Rubinstein D, #Parrella-O'Donnell W, #Brett M, Demes B, Larson SG, O'Neill MC. A reduced 'pelvic step' partially explains short stride length during human bipedalism. *Society for Integrative and Comparative Biology Annual Meeting*. Washington, DC. January 2021.
- 2020 #Brett M, #Parrella-O'Donnell W, #Rubinstein D, **Thompson NE**. The pelvic step in human and chimpanzee bipedalism. *Northeast Regional Vertebrate Evolution Symposium*. Boston, MA. March 2020.
- 2020 #Kikel M, #Gecelter R, #Kelshikar R, **Thompson NE**. Evolution of pelvic list, hip adduction, and step width in hominins. *American Journal of Physical Anthropology*, 171(S69): 141. doi: 10.1002/ajpa.24023
- 2020 ***Thompson NE**, Almécija S. Estimating ground reaction force position in the knuckle-walking chimpanzee hand. *American Journal of Physical Anthropology*, 171(S69): 283. doi: 10.1002/ajpa.24023
- 2020 Radwanski Z, Brimmer C, **Thompson NE**, O'Neill MC. An inverse kinematics solution so the problem of collecting 3-D motion data outside of the lab. *American Journal of Physical Anthropology*, 171(S69): 226. doi: 10.1002/ajpa.24023
- 2020 #Gecelter R, #Kikel M, **Thompson NE**. Hip moments and muscle activity during compensatory osteoarthritis gaits. *Society for Integrative and Comparative Biology Annual Meeting*. Austin, TX. January 2020.
- 2020 #Kikel M, #Gecelter R, **Thompson NE**. Evolutionary origins of human pelvic list, hip adduction, and step width. *Society for Integrative and Comparative Biology Annual Meeting*. Austin, TX. January 2020.
- 2019 #Gecelter RC, #Kikel M, **Thompson NE**. The Hip biomechanics and muscle activity underlying compensatory osteoarthritis gaits. *Society for Integrative and Comparative Biology, Northeast Regional Meeting*. Boston, MA. November 2019.
- 2019 #Kikel M, #Gecelter RC, **Thompson NE**. Frontal plane balance and pelvic list in human evolution. *Society for Integrative and Comparative Biology, Northeast Regional Meeting*. Boston, MA. November 2019.
- 2019 #Gecelter R, #Kikel M, **Thompson NE**. Hip muscle activity and mechanics in osteoarthritis gait. *OMED: Osteopathic Medical Education Conference*. Baltimore, MD. October 2019.
- 2019 #Kikel M, #Gecelter R, **Thompson NE**. The link between step width and pelvic compensatory mechanisms in hip osteoarthritis. *OMED: Osteopathic Medical Education Conference*. Baltimore, MD. October 2019.
- 2019 **Thompson NE**. Some observations on the mechanics of knuckle-walking. *Northeast Regional Vertebrate Evolution Symposium*. Old Westbury, NY. April 2019.
- 2019 **Thompson NE**, Patel BA, Stern JT Jr., Larson SG. 3-D kinematics, kinetics, and EMG of knuckle-walking in chimpanzees. *American Journal of Physical Anthropology*, 168(S68): 246–247. doi: 10.1002/ajpa.23802
- 2019 Gibbons D, Patel BA, Henzi SP, Young, C, Jarrett, J, **Thompson NE**. Effect of infant carriage on joint yield in wild vervet monkeys. *American Journal of Physical Anthropology*, 168(S68): 92. doi: 10.1002/ajpa.23802

- 2019 Grider-Potter, N, Nalley TK, **Thompson NE**, Goto R, Nakano Y. Head and neck range of motion and its relation to cervical vertebral morphology in primates. *American Journal of Physical Anthropology*, 168(S68): 85. doi: 10.1002/ajpa.23802
- 2018 ***Thompson NE**, #Ostrowsky KR, McFarlin SC, Robbins MM, #Rubinstein D, Almécija, S. Preliminary 3-D kinematic data of wild Mountain Gorilla terrestrial locomotion: using lab-based methods in ape environments. *American Journal of Physical Anthropology*, 165(S66): 274. doi: 10.1002/ajpa.23489
- 2018 #Koll N, #Ahmed L, **Thompson NE**. Digitizing the Nissen/ Riesen chimpanzee longitudinal radiographic series. *American Journal of Physical Anthropology*, 165(S66): 144. doi: 10.1002/ajpa.23489
- 2018 #Rubinstein D, Larson SG, **Thompson NE**. Great ape thorax and shoulder—adapted for arboreality or knuckle-walking? *American Journal of Physical Anthropology*, 165(S66): 233. doi: 10.1002/ajpa.23489
- 2018 #Ostrowsky KR, **Thompson NE**, McFarlin SC, Robbins MM, Stoinski TS, Almécija, S. Capturing 3-D locomotor kinematics in wild mountain gorillas (*Gorilla beringei beringei*). *American Journal of Physical Anthropology*, 165(S66): 195. doi: 10.1002/ajpa.23489
- 2018 *Holowka NB, Hatala KG, Demes B., **Thompson NE**, Wunderlich RE. Chimpanzee plantar pressure distributions and the origins of bipedal plantigrady. *American Journal of Physical Anthropology*, 165(S66): 124. doi: 10.1002/ajpa.23489
- 2018 McNutt E, Kilham B, Casana J, Hatala KG, Hill AC, Johnson C, Kilham P, Reader C, **Thompson NE**, DeSilva J. Reassessing the ursid hypothesis for the Laetoli “A” bipedal trackway. *PaleoAnthropology*, 2018: A20. doi: 10.4207/PA.2018.ABS16
- 2018 #Ostrowsky KR, **Thompson NE**, McFarlin SC, Robbins MM, Stoinski TS, Almécija, S. Capturing 3D locomotor kinematics in wild mountain gorillas (*Gorilla beringei beringei*). *The George Washington University Research Days*. Washington, DC. April 2018.
- 2018 **Thompson NE**, #Ostrowsky KR, McFarlin SC, Robbins MM, Gibbons D, Almécija, S. Advances in wild ape kinematics: Mountain gorillas. *Northeast Regional Vertebrate Evolution Symposium*. Old Westbury, NY. March 2018.
- 2017 ***Thompson NE**, O’Neill MC, Demes B. Pelvic height, lumbar entrapment, and their effects on upper body stability during bipedalism. *American Journal of Physical Anthropology*, 162(S64): 381. doi: 10.1002/ajpa.23210
- 2017 *O’Neill MC, Ogihara N, Nakatsukasa M, Demes B, **Thompson NE**, Umberger BR. Pelvis shape, lumbar column length and the origin of the human walking stride. *American Journal of Physical Anthropology*, 162(S64): 305. doi: 10.1002/ajpa.23210
- 2017 **Thompson NE**, Demes B, #Ostrowsky KR, McFarlin SC, Robbins MM, Stoinski TS, Almécija S. Biomechanics of knuckle-walking in African apes. *The Society for Integrative and Comparative Biology Annual Meeting*. New Orleans, LA. January 2017.
- 2017 Holowka NB, *Bhandal V, *Lam O, **Thompson NE**, Demes B. Chimpanzee impact forces during walking and implications for the evolution of bipedalism. *The Society for Integrative and Comparative Biology Annual Meeting*. New Orleans, LA. January 2017.

- 2016 ***Thompson NE**, Demes B, O'Neill MC. Frontal plane trunk mechanics in humans and chimpanzees, and implications for the bipedal gait of the last common ancestor. *American Journal of Physical Anthropology*, 159(S62): 314.
- 2016 Sumner BJ, **Thompson NE**, Demes B, Larson SG, Stern JT Jr. Arm swing in bipedally walking chimpanzees. *American Journal of Physical Anthropology*, 159(S62): 307–308.
- 2016 ***Thompson NE**, Demes B, O'Neill MC. Three dimensional trunk kinematics of humans and chimpanzees: New insights on early hominin bipedalism. *The American Association of Anatomists Annual Meeting*. San Diego, CA. April 2016.
- 2016 Sumner BJ, Larson SG, Demes B, **Thompson NE**, Stern JT Jr. Arm swing in bipedally walking chimpanzees. *The Society for Integrative and Comparative Biology Annual Meeting*. Portland, OR. January 2016.
- 2015 **Thompson NE**, Demes B, O'Neill MC, Holowka NB, #Li J. The effects of trunk morphology on bipedal locomotion in chimpanzees (*Pan troglodytes*). *American Journal of Physical Anthropology*, 156(S60): 304–305.
- 2015 Demes B, **Thompson NE**, O'Neill MC, Umberger BR. Chimpanzee bipedal gait mechanics and early hominin gait evolution. *American Journal of Physical Anthropology*, 156(S60): 119.
- 2015 Holowka NB, Demes B, O'Neill MC, **Thompson NE**. Chimpanzee foot and ankle joint motion during vertical climbing. *American Journal of Physical Anthropology*, 156(S60): 168.
- 2014 ***Thompson NE**, O'Neill MC, Demes B. Three-dimensional head kinematics during terrestrial locomotion in humans and chimpanzees. *The Society for Integrative and Comparative Biology Annual Meeting*. Austin, TX. January 2014.
- 2014 *Demes B, O'Neill MC, **Thompson NE**. Chimpanzee bipedal gait mechanics and early hominin gait evolution. *The Society for Integrative and Comparative Biology Annual Meeting*. Austin, TX. January 2014.
- 2014 *O'Neill MC, Lee LF, Larson SG, Stern JT Jr., Demes B, **Thompson NE**, Umberger BR. Individual muscle function in chimpanzee bipedalism II: Musculoskeletal model predictions based on static optimization. *American Journal of Physical Anthropology*, 153(S58): 199.
- 2013 Lee LF, O'Neill MC, Demes B, **Thompson NE**, Larson SG, Stern JT Jr, Umberger BR. The mechanics of economical walking: insights from chimpanzee and human bipedalism. *American Society of Biomechanics Annual Meeting*. Omaha, NE. September 2013.
- 2013 **Thompson NE**, O'Neill MC, Demes B, Larson SG. Three-dimensional head kinematics in chimpanzees and humans: implications for the study of semicircular canal morphology. *American Journal of Physical Anthropology*, 150(S56):272.
- 2013 O'Neill MC, Lee LF, Demes B, **Thompson NE**, Larson SG, Stern JT Jr, Umberger BR. The effects of musculoskeletal structure on joint mechanics in chimpanzee (*Pan troglodytes*) bipedal walking. *American Journal of Physical Anthropology*, 150(S56): 210.
- 2013 Umberger BR, O'Neill MC, Demes B, Lee LF, **Thompson NE**, Larson SG, Stern JT Jr. Differences in the mechanics of chimpanzee and human bipedal walking. *International Congress of Vertebrate Morphology*. Barcelona, Spain. July 2013.

- 2012 Lee LF, O'Neill MC, Demes B, LaBoda MD, **Thompson NE**, Larson SG, Stern JT Jr, Umberger BR. Joint kinematics in chimpanzee and human bipedal walking. *American Society of Biomechanics Annual Meeting*. Gainesville, FL. August 2012.
- 2012 **Thompson NE**, O'Neill MC, Larson SG, Umberger BR. Passive joint motion of the chimpanzee knee, ankle, and foot. *American Journal of Physical Anthropology*, 147(S54): 286.
- 2012 *O'Neill MC, Demes B, **Thompson NE**, Larson SG, Stern JT Jr, Lee LF, Umberger BR. Chimpanzee bipedalism: integrating experiments and musculoskeletal modeling. *American Journal of Physical Anthropology*, 147(S54): 227–228.

Invited Lectures

- 2020 The American Museum of Natural History – Richard Gilder Seminar Series
March 23, 2020 – “Why does the human pelvis function so strangely during walking?”
(Postponed due to COVID-19)
- 2018 The New York Consortium in Evolutionary Primatology (NYCEP) – New York Regional Primatology Colloquium Series
November 29, 2018 – “Testing hominid evolutionary hypotheses with 3-D kinematic data: New findings and new directions”
- 2017 Adelphi University – Biology Department Honors Colloquium (SCI 205)
March 10, 2017 – “Put your back into it: human vertebral evolution, function, and disfunction”
- 2016 Northeast Ohio Medical University
March 17, 2016 – “The role of the upper body in human evolution”
- 2015 Harvard University – Biomechanics Seminar
November 20, 2015 – “Surprising trunk rotational capabilities in chimpanzees and implications for bipedal walking proficiency in early hominins”
- 2015 Stony Brook University – Seminar on Bioethics (EBH 401)
May 11, 2015 – “The Stony Brook Primate Locomotor Lab”

Conferences and Symposia Organized

- 2020 APSA 2020 First Annual Virtual Poster Presentation. Oct 1, 2020. Old Westbury, NY.
- 2018 Young JW, Holowka NB, Patel BA, Polk JD, **Thompson NE**, Wallace IJ. The necessity of experimental research in primate functional morphology: an homage to the Stony Brook Primate Locomotion Laboratory. Contributed Poster Symposium. *Annual Meeting of American Association of Physical Anthropologists*, 2018. Austin, TX.

Grants, Awards, and Honors

Total Grants and Awards Received: \$233,950

- 2021 – 2026 \$747,760 (not funded; panel recommendation: NSF SBE Bio Anth: ‘Competitive B’, NSF PSS PMB: ‘High’) – The National Science Foundation, Project PI: *CAREER: Establishing biomechanical links between ape locomotion, evolution, and anatomy through novel field-*

	<i>based 3D data collection and skeletal modeling</i> ; Senior Personnel: Dr. Sergio Almécija, Dr. Lillian Niwagaba
2020 – 2025	\$729,674 (not funded; panel recommendation: NSF SBE Bio Anth: ‘Competitive B’, NSF PSS PMB: ‘Medium’) – The National Science Foundation, Project PI: <i>CAREER: Establishing biomechanical links between ape locomotion, evolution, and anatomy through novel field-based 3D data collection and skeletal modeling</i> ; Senior Personnel: Dr. Sergio Almécija, Dr. Lillian Niwagaba
2020 – 2021	\$6,155 (not funded)– National Geographic, Project Member: <i>Form and proficiency in human tree-climbing: A characterization of arboreal locomotor behavior in rainforest hunter-gatherers</i> ; Project Leader: George Brill; Project Members: Dr. Vivek Venkataraman, Dr. Thomas Kraft, Dr. Nathan E Thompson, Mr. Nazip Suratman
2020 – 2021	\$71,059 (not funded) – The American Osteopathic Association, Project PI: <i>The walking mechanics underlying gait compensation in hip osteoarthritis</i> .
2016 – 2019	\$219,346 – The National Science Foundation, Project PI: <i>The Biomechanics of Specific Locomotion used by Our Closest Living Primate Relatives</i> (NSF SMA 1719432); Co-PIs: Dr. Sergio Almécija, Dr. Shannon McFarlin
2016	\$500 – The American Association of Physical Anthropologists – The Mildred Trotter Prize for Exemplary Student Research
2016	\$963 – Stony Brook University Graduate Student Organization – Distinguished Travel Award
2015	\$1,200 – Stony Brook University – Norman Creel Prize for Outstanding Student Research
2014 – 2016	\$8,641 – The Leakey Foundation – <i>Kinematics and evolution of upper body stability in hominins</i>
2014 – 2016	\$19,976 (not funded) – The National Science Foundation – <i>Doctoral Dissertation Improvement: The Evolution of Upper Body Stability in Hominins</i>
2014 – 2016	\$15,131 (not funded) – The Wenner-Gren Foundation – The Evolution of Upper Body Stability in Hominins
2013 – 2016	\$1400 – Stony Brook University – Graduate Student Organization RAP Funding
2013 – 2014	\$500 – Sigma Xi Grant-in-Aid of Research – <i>Function of the Lumbar Lordosis in Hominins</i>
2013	\$400 – Stony Brook University – Kevin King / John Miller Travel Scholarship Award
2012, 2014	\$1000 – American Association of Physical Anthropologists – William S. Pollitzer Student Travel Award
2009	Graduated <i>Magna Cum Laude</i> , Washington University in St. Louis
2005 – 2009	Deans List (8 semesters), Washington University in St. Louis

Program Development

New York Institute of Technology College of Osteopathic Medicine

NYIT COM STEP Tutoring Program – Co-Creator and Co-Director – Year-long program where NYIT COM medical students provide college entrance examinations preparation to economically disadvantaged and historically underrepresented minority high-school students in Long Island, NY through the NYIT COM Science Technology and Entry Program.

NYIT COM Peer-to-Peer Tutoring Program – Creator and Faculty Director – Year-long program where 2nd year NYIT COM students provide tutoring to 1st year peer groups.

NYIT Anatomy Laboratory Research Program – Co-Creator and Co-Director – An anatomy-laboratory based program where 2nd year students create and lead collaborative projects with 1st year students currently taking gross anatomy. All projects utilize resources within the anatomy laboratory and are either basic science or medical education in nature. This program also includes research-based skills lectures, such as ‘how to conduct literature reviews’ and ‘how to prepare effective posters and talks’.

Teaching Experience

New York Institute of Technology College of Osteopathic Medicine

Gross Anatomy – Foundations of Osteopathic Medicine – Instructor – Semester-long dissection based gross anatomy for first year medical students (~440 students) located at two sites, Old Westbury, NY and Jonesboro, AR. Included development of a mandatory medical imaging and bone laboratory which introduced students to radiology through lectures and small group peer-led learning, as well as functional anatomy lectures, and standard cadaveric laboratory anatomical teaching.

Teaching evaluations: 2020: 3.93/4 (40 responses; smaller cohort size due to COVID)
2019: 3.91/4 (196 responses)
2018: 3.92/4 (144 responses)
2017: 3.71/4 (85 responses; did not teach regularly in 2017)
2016: 3.92/4 (138 responses)

Research Methods in Biomedical Sciences – Guest Instructor – Lead two discussion-based seminars on “Biomechanics and kinematics: free-body diagrams, Hill muscle models, stress-strain analysis, gait graphs” and “Modeling: static modeling, dynamics modeling, fluid dynamics” for D.O./Ph.D. students.

Advanced Concepts in Neuromusculoskeletal Sciences (MMNM 719) – Guest Instructor – Led discussion-based seminars for 16 third-year medical students participating in a five-year D.O./M.S. program in neuromusculoskeletal sciences. Led topics including: “Biomechanics/musculoskeletal research and anatomy/morphometry” and “Testing hypotheses about sensori-motor (dys)function”.

Stony Brook University

The Body, Medical Gross Anatomy (HBA 531) – Graduate Teaching Assistant – Semester long dissection based gross anatomy for first year medical students (120–130 students). Included laboratory teaching, practical exam preparation, and grading of written exams. Taught 3 times. Course directors: Jack T Stern Jr. and Susan Larson.

Teaching evaluations: 2015: 4.8/5 (110 responses)
2012: 4.9/5 (118 responses)
2011: 4.7/5 (112 responses)

Anatomy Core Course for Dental Residents – Instructor – Month long lecture and dissection based advanced gross anatomy for first year dental residents (DDS) specializing in endodontics, orthodontics, pediatric dentistry, periodontics, prosthodontics (12–17 students). Included preparation and delivery of lectures, laboratory teaching, and exam preparation. Taught 3 times. Course Director: Stephanos Kyrkanides

Women in the Laboratory: Rocks, Fossils and the Biology of Ancient Life (WSE 187) – Instructor/Course Director – Month long introductory course for undergraduate women in science and engineering (9–12 students). Included course and lecture preparation, delivery, and grading. Taught 2 times. Course director: Nathan Thompson, Simone Hoffmann, Matt Borths

Washington University in St. Louis

Course Assistant, Introduction to Engineering (EN120) – Semester long project based course introducing freshmen engineering students to the various disciplines of engineering (25 students). Included organizing, leading, and grading small group projects. Taught 1 times. Course Director: Jill Seward

Mentoring

Formal Advising

2018 – Present Student Advising and Mentoring Program – Formal advisor/mentor for 5 NYIT College of Osteopathic Medicine students per class per year.

Graduate Student Mentoring

(* Indicate co-authorship on published paper or abstract):

2020–Present Yaffa Ilyaguyeva* – 1st Year DO student, NYIT College of Osteopathic Medicine, Project: “The menisci are not shock absorbers: a biomechanical and evolutionary perspective”.

2019–2021 Rachel Gecelter* – 3rd Year DO student in the Academic Medicine Scholars Program at NYIT College of Osteopathic Medicine, earning a Master’s Degree in Neuromusculoskeletal Sciences. Advisor for the project: “The mechanics underlying hip osteoarthritis gait”. 2020 Recipient of the NYIT Edward Guiliano Global Fellowship (\$750)

2019–2020 Michelle Kikel* – 3rd Year DO student in the Academic Medicine Scholars Program at NYIT College of Osteopathic Medicine, earning a Master’s Degree in Neuromusculoskeletal Sciences. Advisor for the project: “Step width and pelvic list/hip moments in normal humans”.

2017–2020 Taner Celebi* – 3rd Year DO student in the Academic Medicine Scholars Program at NYIT College of Osteopathic Medicine, earning a Master’s Degree in Neuromusculoskeletal Sciences. Advisor for the project: “Re-evaluation of Perimortem Fractures in the Fossil Lucy (*Australopithecus afarensis*)”; 1-2nd Year DO student, participating in digitization and curation of a longitudinal sample of chimpanzee radiographs.

2019–2020 Rachana Kelshikar* – 2nd Year DO student, NYIT College of Osteopathic Medicine, Project: “Is step width decoupled from pelvic motion in human evolution?”.

2018–2020 Matthew Brett* – 1st Year DO student, NYIT College of Osteopathic Medicine, Project: “Pelvic Rotations and Stride Lengths in Humans and Primates”.

2017–2020 William Parrella-O’Donnell* – 2nd Year DO student, NYIT College of Osteopathic Medicine, participating in the project “Pelvic Rotations and Stride Lengths in Humans and Primates”.

- 2018 Angelina Siev – 1st Year DO student, NYIT College of Osteopathic Medicine, Project: “Pelvic Rotations and Stride Lengths in Humans and Primates”.
- 2017–2019 Kelly R. Ostrofsky* – Ph.D. Student, The George Washington University, Ph.D. committee member. Project: “Using Behavioral and Kinematic Methods to Characterize Arboreal Behavior of Bwindi Mountain Gorillas.”
- 2017–2019 Danielle Rubinstein* – 3rd Year DO student in the Academic Medicine Scholars Program at NYIT College of Osteopathic Medicine, earning a Master’s Degree in Neuromusculoskeletal Sciences. Advisor for the project: “Thoracic Shape, Shoulder Motion, and the Evolution of Climbing and Quadrupedalism in Chimpanzees”. 2018 Recipient of the NYIT Edward Guiliano Global Fellowship (\$500); 2018 Recipient of the AAPA Pollitzer Travel Award (\$500).
- 2017–2018 Zachary Coopee* – 1st Year DO student, NYIT College of Osteopathic Medicine, participating in digitization and curation of a longitudinal sample of chimpanzee radiographs.
- 2017 Lameesah Ahmed* – 1st Year DO student, NYIT College of Osteopathic Medicine, recipient of Summer Student Research Program Award at NYIT College of Osteopathic Medicine for the project: “Growth and Ossification of a Longitudinal Comparative Sample of Chimpanzees”.
- 2017 Nikki Koll* – 1st Year DO student, NYIT College of Osteopathic Medicine, participating in digitization and curation of a longitudinal sample of chimpanzee radiographs. 2018 Recipient of the NYIT Edward Guiliano Global Fellowship (\$500).
- 2013 – 2014 Tutor – Regional Human Anatomy (HBA 561)
- 2012 – 2014 Tutor – Gross Anatomy of the Head, Neck and Trunk (HBA 521, Dental Anatomy)
- 2012 Tutor – Medical Embryology

Undergraduate Students Mentored

Research Assistants (* Indicate co-authorship on published paper or abstract):

- 2016 Vincent Bhandal* – “Foot-strike patterns of chimpanzees”. Co-advised by Nicholas Holowka (Stony Brook University).
Presented Project: Bhandal V, Lam O, Holowka NB, Thompson NE, Demes B. 2016. Analysis of foot strike forces in chimpanzee locomotion: Implications for the evolution of human walking. *URECA Undergraduate Research Symposium*. Stony Brook, NY. April 2016.
Awarded: 2016 URECA Outstanding Undergraduate Research Award (jointly with Otto Lam)
- 2015 – 2016 Morgan Mars – Project: “Kinematics of knuckle walking in chimpanzees”
- 2014 – 2016 Otto Lam* – Project: “Foot-strike patterns of chimpanzees”. Co-advised by Nicholas Holowka (Stony Brook University): Presented at the Undergraduate Research (URECA) Symposium at Stony Brook University.
Presented Projects: Bhandal V. 2015. Analysis of the chimpanzee foot strike during bipedal locomotion. *URECA Undergraduate Research Symposium*. Stony Brook, NY. April 2015.

Bhandal V, Lam O, Holowka NB, Thompson NE, Demes B. 2016. Analysis of foot strike forces in chimpanzee locomotion: Implications for the evolution of human walking. *URECA Undergraduate Research Symposium*. Stony Brook, NY. April 2016.

Awarded: 2016 URECA Outstanding Undergraduate Research Award (jointly with Vincent Bhandal)

- 2014 – 2015 Andy Li* – Project: “Kinematics of upper body motion in humans and chimpanzees”
2014 Tony Lu – Project: “Kinematics of upper body motion in humans and chimpanzees”
2013 James Scott – Project: “Upper body coordination during chimpanzee bipedalism”
2013 Sunshine Littlecreek – Project: “Kinematics of chimpanzee and human locomotion”
2012 – 2013 Jonathan Castano – Project: “Kinematics of chimpanzee and human locomotion”
2012 Sarah Baumgarten – Project: “MicroCT reconstruction of hominid labyrinths”

High School Students Mentored

- 2013 – 2014 Marade Bergen – Project: “A Digital Reconstruction of the Semicircular Canal System in Subterranean Taxa”. Co-advised by Simone Hoffmann (Stony Brook University). Presented at the New York State Science & Engineering Fair ANDROMEDA competition and received 2nd place in animal sciences and 3rd place overall.

Multimedia and Press Coverage

- 2021 Press for the article “Fossil apes and human evolution”:
Science Video, ScienceNOW, Sci-News, Science Daily, Phys.org, Among others
Press for the article “The loss of the ‘pelvic step’ in human evolution”
BBC World Service, New Scientist, Phys.org, among others. Featured in ‘Inside JEB’:
Knight, K. Humans ditched swivelling hips for shorter stride than chimps. *Journal of Experimental Biology*. 224:jeb243185. doi:10.1242/jeb.243185
- 2020 Article: “The biomechanics of knuckle-walking: 3-D kinematics of the chimpanzee and macaque wrist, hand, and fingers.” Featured in ‘Inside JEB’:
Knight, K. Knuckle-walking chimpanzees go 3D with Avatar technology. *Journal of Experimental Biology*. 223:jeb231860. doi:10.1242/jeb.231860
- 2018 Adventures in Research Facebook Live Interactive Lecture
<https://www.facebook.com/mynyit/videos/10155578883948325/>
- 2018 Press for the article “Unexpected terrestrial hand posture diversity in wild mountain gorillas”:
New Scientist
- 2017 Press for the article “Chimpanzee and human midfoot motion during bipedal walking and the evolution of the longitudinal arch of the foot”:
Science Daily, The Daily Mail, Wired.it, Phys.org, among others
- 2015 Press for the article “Surprising trunk rotational capabilities in chimpanzees and implications for bipedal walking proficiency in early hominins”:
Nature Video, Science Daily, Smithsonian Magazine, IFL Science, Daily Mail, Leakey Foundation, Science News, Wired, Tech Times, among others
- 2014 The Leakey Foundation Blog – Grantee Spotlight

Field Experience

Neontological

- 2018 – Present PI – 3-D Kinematics of Orangutans; Co-PIs: Dr. Sergio Almécija. Two localities: Tuanan Orangutan Research Project, Central Kalimantan, Borneo, Indonesia; The Sumatra Orangutan Conservation Programme, North Sumatra, Indonesia
- 2016 – Present PI – 3-D Kinematics of Wild Mountain Gorillas; Co-PIs: Dr. Sergio Almécija, Dr. Shannon McFarlin. Two field localities: Bwindi Impenetrable National Park, Uganda; Volcanoes National Park, Rwanda.

Paleontological

- 2014 Cloverly Formation, Bighorn Basin, Wyoming. Excavation of Cretaceous vertebrate fossils. Director: Dr. Michael D'Emic.

Representative Positions and Service

- 2021 Reviewer – NYIT COM In-House Grant Program
- 2020 – Present Judge – American Association of Physical Anthropology, Pollitzer Student Award Competition
- 2021 – Present Senator – NYIT College of Osteopathic Medicine Representative to the all-NYIT Academic Senate
- 2019 – Present Chair – NYIT College of Osteopathic Medicine Faculty Senate By-Laws Committee
- 2018 – Present Faculty Advisor – American Physician Scientists Association, NYIT College of Osteopathic Medicine Local Chapter
- 2018 – Present Faculty Representative – NYIT College of Osteopathic Medicine Research Advisory Committee Biomechanics
- 2018 – Present College Representative – NYIT Office of Sponsored Programs and Research Advisory Council
- 2017 – Present Senator – NYIT College of Osteopathic Medicine Faculty Senate
- 2016 – Present Institutional Animal Care and Use Committee – NYIT College of Osteopathic Medicine
- 2019 – 2020 President – NYIT College of Osteopathic Medicine Faculty Senate
- 2019 – 2020 Senate Representative – NYIT College of Osteopathic Medicine Curriculum Advisory Committee (*Ex Officio*)
- 2019 – 2020 Senate Representative – NYIT College of Osteopathic Medicine Reappointment and Promotions Committee (*Ex Officio*)
- 2018 – 2019 President Elect – NYIT College of Osteopathic Medicine Faculty Senate
- 2018 – 2019 Member – Graduate Medical Education Committee – New York College of Osteopathic Medicine Educational Consortium (*Ex Officio*)
- 2018 – 2019 Chair – Anatomy Faculty Search Committee
- 2017 – 2018 Chair – NYIT COM Faculty Senate By-Laws Committee
- 2014 – 2015 Graduate Student Representative – Stony Brook University Senate

2014 – 2015 Chair – Stony Brook Graduate Student Organization Board of Appeals
2014 Judge – The Charles Duggan Long Island Science and Engineering Fair
2013 – 2015 Student Representative – Stony Brook Graduate Student Organization Representative
2013 – 2015 President – Evolutionary Biology Discussion Group
2011 – 2013 Secretary – Evolutionary Biology Discussion Group
2009 Scientific Expert – Pete Conrad Spirit of Innovation Awards
2008 Scholarship Chairman – Sigma Nu Fraternity, Washington University in St. Louis

Ad-hoc referee for journals and granting organizations: *The National Science Foundation, The European Science Foundation, Proceedings of the Royal Society: Series B, Journal of Human Evolution, American Journal of Physical Anthropology, Scientific Reports, Parkinson's Disease, PeerJ, Journal of Vertebrate Paleontology, The Leakey Foundation, Plos One, Evolutionary Anthropology, Nature Communications Biology, American Journal of Human Biology, Journal of Experimental Biology*

Professional Associations

The Society for Integrative and Comparative Biology Member
American Association of Physical Anthropologists Member
American Association of Anatomists Member
Sigma Xi: The Scientific Research Society Member