



Erin Marie Williams
Curriculum Vitae

The George Washington University, Department of Anthropology
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Appointments:

2012-present Assistant Research Professor, Department of Anthropology, The George Washington University
Fall, 2011-present NSF Minority Postdoctoral Research Fellow, The George Washington University

Education:

The George Washington University	Hominid Paleobiology Doctoral Program	PhD, 2011
The George Washington University	Hominid Paleobiology Doctoral Program	MPhil, 2008
The George Washington University	Department of Anthropology	MA, 2007
Grinnell College	Department of Anthropology	BA, 2000

Research Funding

2012-2013 L'Oreal USA Fellowship for Women in Science (PI, **EM Williams**)
Amount: \$60,000

2011-2013 National Science Foundation, Minority Postdoctoral Research Fellowship, Social, Behavioral and Economic Sciences (1103470), "Early hominin decision-making processes and raw material quality," (PI, **EM Williams**; Sponsoring scientist, Brian G. Richmond)
Amount: \$120,000

2009-11 National Science Foundation, Archaeology, (0903652), "Doctoral Dissertation Improvement Grant: Influences of materials properties and biomechanics on stone tool production," (PI, Dr. Alison S Brooks; Co-PI, **EM Williams**)
Amount: \$14,984

2009-10 The Wenner-Gren Foundation (Gr. 7995) "Influences of materials properties and biomechanics on stone tool production," (PI, **EM Williams**)
Amount: \$10,500

2007 Sigma Xi Grant in Aid of Research, Sigma Xi, The George Washington University Chapter, "Wrist mobility during Oldowan stone tool production," (PI, **EM Williams**)
Amount: \$500

2005 Lewis N. Cotlow Research Award, Anthropology Department, The George Washington University, "Manual manipulation in Middle Stone Age and Upper Paleolithic tool production," (PI, **EM Williams**)
Amount: \$1,500

Publications in Peer-Reviewed Journals:

- In prep** **Williams, EM**; Gordon, AD; Richmond, BG. "Methods for achieving accuracy and efficiency and the use of proximal-to-distal joint sequences during stone tool production."
- In prep** **Williams, EM**; Constantino, PJ; Richmond, BG. "The effects of raw material properties on manual pressure distribution during knapping."
- In review** **Williams, EM**; Richmond, BG. "The evolution of human thumb robusticity and tool use." *Science*.
- 2012** **Williams, EM**; Gordon, AD; Richmond, BG. "Hand pressure distribution during Oldowan stone tool production." *Journal of Human Evolution* 62:520-532.
- 2010** **Williams, EM**; Gordon, AD; Richmond, BG. "Upper limb kinematics and the role of the wrist during stone tool production." *American Journal of Physical Anthropology* 143:134-145.

Book Chapters

- Submitted** **Williams, EM**. "Biomechanics of the human hand: from stone tools to computer keyboards." in *The Evolution of the Primate Hand: Perspectives from Anatomical, Developmental, Functional and Paleontological Evidence*. Kivell, TL; Lemelin, P; Richmond, BG; and Schmitt, D (eds). Springer, New York, NY.

Delivered Papers/Refereed Abstracts:

- Submitted** **Williams, EM**; Gordon, AD; Brooks, AS; Richmond, BG. "The functional significance of the modern human hand and wrist toward stone tool behaviors," XXIV Congress of the International Society for Biomechanics, Natal, Brazil, 2013.
- Submitted** Wellens, K; **Williams, EM**; Braun, D; Gordon, AD; Grabowski, M; Brooks, AS. "A novel method for accurately and precisely capturing external platform angle," Paleolithic Society, 2013
- Accepted** **Williams, EM**; Gordon, AD; Brooks, AS; Richmond, BG. "Acheulean and Oldowan tool manufacture upper limb strategies," Paleoanthropology Society, 2013
- 2012** **Williams, EM** and Richmond, BG. "Manual pressure distribution during stone tool use," *American Journal of Physical Anthropology*, 147: Supplement 54:303.
- 2011** Richmond, BG and **Williams, EM**. "The evolution of the upper limb after *Australopithecus*: Integrating paleontology and experimental functional morphology." Canadian Association for Physical Anthropologists, Montreal, Quebec.
- 2011** **Williams, EM**; Gordon, AD; Richmond, BG. "Achieving efficiency and accuracy during Oldowan stone tool production," (invited participant). *American Journal of Physical Anthropology*, 144: Supplement 52:312.
- 2010** **Williams, EM**; Richmond, BG. "Hand pressure distribution during stone tool production." *Paleoanthropology* 2010:A37.
- 2010** **Williams, EM**; Richmond, BG. "Hand pressure during Oldowan stone tool production." *American Journal of Physical Anthropology*, Supplement 50:243
- 2010** Zipkin, AM; **Williams, EM**; Brooks, AS; Richmond, BG. "Digging stick use and hand biomechanics." *Paleoanthropology* 2010:A39.
- 2009** **Williams, EM**; Gordon, AD; Richmond, BG. "Wrist and upper limb kinematics of amateur knappers during stone tool production." *American Journal of Physical Anthropology*, Supplement 48:272.

- 2008** **Williams, EMS**; Gordon, AD; Richmond, BG. "Upper limb motion during stone tool production." *Paleoanthropology* 2008:A35.
- 2007** **Williams, EM**. "An accurate and precise method for quantifying lithic edge angles." Society for American Archaeologists, Austin, TX.

Contributed Articles

- 2009** **Williams, EM**. "Exhuming Rwanda's gorillas: Fossey's legacy" 9 part series, NPR, July 27-August 13, 2009
 "Why dig up mountain gorillas?" July 27, 2009
 "Rwanda and a golden monkey," July 28, 2009
 "Poetry in pathology: deciphering the lives of gorillas," July 29, 2009
 "Bones the size of a pea," July 30, 2009
 "A public menace: driver ants," August 3, 2009
 "Meet Bosco, Dian Fossey's right-hand man," August 4, 2009
 "Cleaning bones: messy, but somebody's gotta do it," August 5, 2009
 "Rwanda's mountain medicine," August 6, 2009
 "Wrap-up: leaving the Virunga Mountains," August 13, 2009
- 2007** Aubrey, A; Neel, J; Silberner, J; and **Williams, EM**. "News Report Fuels Confusion about Women, Fish," NPR, October 4, 2007
- 2007** **Williams, EM**. "Company Attempts Air-Conditioned Clothing," NPR, October, 2007
- 2007** **Williams, EM**. "Outsourcing Excavations to Skilled Professionals," NPR's Intern Edition, November 29, 2007
- 2007** Malakoff, D. and **Williams, EM**. "Q&A: An Examination of the Kyoto Protocol," NPR, June 6, 2007
- 2007** **Williams, EM**. "An Interview with Dr. Francys Subiaul, a Latin American Scientist," *Celebra la Ciencia*, March 8, 2007
- 2007** **Williams, EM**. "Dr. Hormiga: an investigator of spiders," *Celebra la Ciencia*, April 19, 2007

Invited Presentations:

- 2012** **Williams, EM**. "The influences of stone tool production and use on the evolution of the human hand and wrist." Anthropology Lecture Series, Anthropology Department, Rutgers, The State University of New Jersey, New Brunswick, NJ
- 2011** **Williams, EM**; Gordon, AD; Richmond, BG. "Biomechanical strategies used during stone tool manufacture." Biophysics seminar, Physics Department, The George Washington University, Washington, DC
- 2009** **Williams, EM**; Gordon, AD; Richmond, BG. "Preliminary insights on the wrist's role during stone tool production." Darwin's Legacy: Early Human Evolution in Africa, The New York Consortium in Evolutionary Primatology, New York, NY
- 2009** **Williams, EM**. "Selective pressures influencing the evolution of the human wrist." Rheumatology Grand Rounds, Department of Medicine, The George Washington University, Washington, DC
- 2008** Richmond, BG; Griffin, NL; **Williams, EM**. "Investigating the Origin and Evolution of Human Biomechanics." GW Symposium on Biomedical Engineering and Computing, The George Washington University, Washington, DC
- 2008** **Williams, EM**; Gordon, AD; Richmond, BG. "A Kinematics Study of Upper Limb Biomechanics during Stone Tool Production." GW Symposium on Biomedical Engineering and Computing.

Teaching Experience

- 2012** *Instructor*, Koobi Fora Field School, Koobi Fora, Kenya
2009 *Laboratory Instructor*, Gross Anatomy, GWU School of Medicine and Health Sciences
2004-'06, '08 *Laboratory Instructor*, Introduction to Biological Anthropology
2007 *Laboratory Instructor*, Biological Basis for Human Behavior, GWU
2003 *Lecturer*, Cultures of Africa, GWU

Field/Research Experience

- Current** A human cadaveric examination of the relationship between upper and lower limb muscles (e.g., physiological cross sectional area) and the morphology (e.g., location, size, shape) of the associated muscle attachment sites.
- Current** Developing a method for quantifying the "quality" of raw materials used by early humans for stone tool production and use according to the physical costs different stone materials impose on the tool maker/user (e.g., joint reaction forces and energy demands). Methods include the use of a high-speed Novel Pliance X Expert manual pressure sensor system, Vicon Nexus Motion Capture system and/or Vicon Motus 3-D Motion Video system to record 3-D coordinates of subject's motions, an Instron mechanical testing machine (Vicker's indenter and associated materials analysis methods).
- Current** Field and laboratory investigation of manual force and pressure distributions during stone tool production and use. Utilizes a high-speed Novel Pliance X Expert manual pressure sensor system and traditional lithic analysis methods.
- Current** Examining the role of the upper limb during stone tool production. Utilizes Vicon Motion Capture and Analysis equipment, and traditional lithic analysis methods.
- Current** Investigating the formation of flakes during stone tool production from a fracture mechanics perspective. This research is being conducted in collaboration with researchers from Marshall University. Utilizes an Instron testing machine with a Vicker's indenter to gather material data and mathematically model fracture behavior, and 3-D modeling techniques to capture flake shape.
- 2009** *Exhumation team member*, Mountain Gorilla Skeletal Preservation and Research Project, Ruhengeri, Rwanda
- 2007** *Member* of The Human Origins Program, Smithsonian National Museum of Natural History excavations at Olorgesailie, Kenya
- 2004, 2005** *Member* of The University of Pennsylvania Roc de Marsal Middle Paleolithic excavations, Dordogne Region, France
- 2003-2006** *Research Assistant*, Human Origins Program, The Smithsonian National Museum of Natural History, Washington, DC
- Spring, 1999** *Research Assistant*, Blombos Cave Project, The National History Museum of Southern Africa, Cape Town, South Africa
- 1998-1999** *Research Assistant*, Department of Anthropology, Grinnell College, Grinnell, IA

Professional Memberships

- Applied** *Full member*, Sigma Xi, The George Washington University Chapter
- 2010-present** Physical Anthropology Women's Mentoring Network
- 2010-present** *Member*, The George Washington University chapter of the Edward A. Bouchet Graduate Honors Society
- 2009-present** *Member*, American Association of Physical Anthropologists
- 2007-2010** *Member*, Society of American Archaeologists

Synergistic Activities

- 2013** *Manuscript reviewer*, Philosophical Transactions of the Royal Society B, Biological Sciences
- 2012-present** *Guest teacher*, Pittsburgh Public School's Gifted Program
- 2012** *Volunteer*, USA Science and Engineering Festival
- 2012-present** *Guest speaker*, "HOT: Human Origins Today." Hall of Human Origins, The Smithsonian National Museum of Natural History
- 2012-present** *Proposal reviewer*, Division of Behavioral and Cognitive Sciences, Archaeology, National Science Foundation.
- 2012-present** *Manuscript reviewer*, American Journal of Physical Anthropology
- 2011-present** *Guest presenter*, "The Scientist is In." Hall of Human Origins, The Smithsonian National Museum of Natural History
- 2011-2012** *Volunteer science instructor*, Pittsburgh Boy Scout Pack #274
- 2009-present** *Scientific consultant*, Science Desk, National Public Radio
- 2009** *Reporter, blogger*, Science Desk, National Public Radio
- 2009** *Assistant producer*, Science Desk, National Public Radio
- 2007** *Intern, Reporter, and Host: Intern Edition*, Science Desk, National Public Radio
- 2007** *Co-author*, Primatology and Evolutionary Science Teaching Manual, Celebra la Ciencia, The Capital Area Citizens for Science and The Self Reliance Foundation
- 2007** *Intern*, Celebra la Ciencia, The Capital Area Citizens for Science and The Self Reliance Foundation
- 2005-present** *Work camp leader*, Youth Service Opportunities Project, Washington, DC
- 2005-2006** *Co-organizer* of CASHP Graduate Student Seminar Series
- 2003-2004** *Volunteer coordinator*, Jumpstart, The George Washington University, Washington, DC

Honors and Awards

- 2010-11** The Bouchet Dissertation Writing Fellowship, The George Washington University chapter of the Edward A. Bouchet Graduate Honors Society
- 2008-2009** Selective Excellence Endowment Fellowship in Hominid Paleobiology, Center for the Advanced Study of Hominid Paleobiology, The George Washington University
- 2007-2008** The Loe Endowment Fellowship in Hominid Paleobiology, Center for the Advanced Study of Hominid Paleobiology, The George Washington University
- 2004-2005** Graduate Teaching Fellowship, The George Washington University
- 2000** Graduation with Honors in Anthropology, Grinnell College
- 1998, 1999** Mayo Andelson Memorial Scholarship, Grinnell College
- 1998, 1999** WH Sherman Scholarship, Grinnell College
- 1996-2000** Trustee's Fund Scholarship, Grinnell College

Press Coverage

- 2013** Science News, "Man the martial artist," January, 2013
- 2012** Nova Science Now, "What makes us human," October, 2012
- 2012** NPR, It's Your Health, October, 2012
- 2012** Under the Microscope, "Thumbs up for Erin Marie Williams," September, 2012
- 2012** Wall Street Journal, "L'Oreal USA announces recipients of 2012 For Women in Science Fellowships," August 2012
- 2012** Science Weekly Podcast, December, 2011
- 2011** BBC, "Origins of Us," October, 2011

2010 NPR, Morning Edition, "A handy bunch: tools, thumbs help us thrive," July, 2010
2010 Science News, "For ancient hominids, thumbs up on precision grip," May 8, 2010
2010 GW Today, "Advancing Diversity in Graduate Education," February, 2010

Graduate Advisors:

Dr. Alison S. Brooks, Department of Anthropology, Center for the Advanced Study of Hominid Paleobiology, The George Washington University

Dr. Brian G. Richmond, Department of Anthropology, Center for the Advanced Study of Hominid Paleobiology, The George Washington University