Philip L. Reno

Curriculum Vitae

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Current Position: Assistant Professor

Education:

2006	Ph.D. Biomedical Sciences, Biological Anthropology, Kent State University, Kent, Ohio
1997	MA Anthropology, Kent State University, Kent, Ohio
1994	AB Anthropology, Washington University, St. Louis, Missouri

Research Interests:

Hominid, primate and vertebrate evolutionary-developmental biology; evolution of primary and secondary sexual characters; skeletal biology; the developmental basis for morphological variation.

Research Grants:

2009	NIH Ruth L. Kirschstein NRSA Post Doctoral Fellowship: “Regulatory architecture of the Androgen Receptor locus in development & evolution.”
2003	NSF Dissertation Research Grant: “Dissertation Improvement: Elucidation of growth plate dynamics via immunohistochemistry of the mammalian metacarpal.” NSF-0311768 ($9132)
1997	Sigma XI Grant-in-Aid of Research: “Anthropoid Radial Neck Length and it Implications for Hominid Locomotion” ($600).

Professional Experience:

2011-	Assistant Professor, Department of Anthropology, Pennsylvania State University
2012-	Graduate Faculty, Molecular, Cellular and Integrative Biosciences Program, Pennsylvania State University
2009-2010	Postdoctoral Fellow, Department of Developmental Biology, Stanford University
2007-2009	Research Associate, Howard Hughes Medical Institute and Department of Developmental Biology, Stanford University
2006	Research Associate, Department of Anatomy, Northeastern Ohio Universities College of Medicine
1998-2005	Teaching Assistant, Northeastern Ohio Universities College of Medicine
1998-2001	Instructor, Kent State University.
1995-97	Graduate Assistant, Kent State University.

Publications:

Articles

In prep Kjosness KM, Hines JE, Reno PL. The pisiform growth plate informs on the developmental homology within the mammalian wrist.

In prep Machnicki AL, Lovejoy CO, **Reno PL**. Developmental perspectives on the Lucy sacrum.

In prep Machnicki AL, Strier KB, Spurlock LB, **Reno PL**, Lovejoy CO. Earliest bipedality in hominids: Evidence from the pelvis and locomotion of atelines.

2015 **Reno PL**, Lovejoy CO. From Lucy to Kadanuumuu: Balanced analyses of *Australopithecus afarensis* assembalges confirm only moderate skeletal dimorphism. *PeerJ*. 3:e925; DOI 10.7717/peerj.925.

2014 **Reno PL**. Genetic and developmental basis for parallel evolution and its significance for understanding hominoid evolution. *Evolutionary Anthropology*. 23:188-200.

2014 Kjosness KM, Hines JE, Lovejoy CO, **Reno PL**. The pisiform growth plate is lost in humans and supports a role for Hox in growth plate formation. *Journal of Anatomy*. 255:527-38.

2013 **Reno PL**, McLean CY, Hines JE, Capellini TD, Bejerano G, Kingsley DM. A penile spine/vibrissa enhancer sequence is missing in modern and extinct humans, but is retained in multiple primates with sensory vibrissae and penile spines. *PLoS ONE*. 8(12): e84258. doi:10.1371/journal.pone.0084258

2013 **Reno PL**, Horton WE, Lovejoy CO. Metapodial or phalanx? An evolutionary and developmental perspective on the homology of the first ray's proximal segment. *Journal of Experimental Zoology Part B.* 320B:276-85.

2011 McLean CY*, **Reno PL***, Pollen AA*, Bassan AI, Capellini TD, Guenther C, Indjeian VB, Lim X, Menke DB, Schaar BT, Wenger AM, Bejerano G, Kingsley DM. Human-specific loss of regulatory DNA and the evolution of human-specific traits. *Nature.* 471:216-19.
* Equal author contribution

2010 **Reno PL**, McCollum MA, Meindl RS, Lovejoy CO. An enlarged postcranial sample confirms *Australopithecus afarensis* dimorphism was similar to modern humans. *Philosophical Transactions B.* 365: 3355-63.

2008 **Reno PL**, McCollum MA, Cohn MJ, Meindl RS, Hamrick M, Lovejoy CO. Patterns of correlation and covariation of anthropoid distal forelimb segments correspond to *Hoxd* expression territories. *Journal of Experimental Zoology Part B.* 310B:240-58.

2007 **Reno PL**, Horton WE, Elsey RM, Lovejoy CO. Growth plate formation and development in alligator and mouse metapodials: evolutionary and developmental considerations. *Journal of Experimental Zoology Part B*. 308B:283-296.

2007 Serrat MA, **Reno PL**, McCollum MA, Meindl RS, Lovejoy CO. Variation in mammalian proximal femoral development: comparative analysis of two distinct ossification patterns. *Journal of Anatomy*. 210:249-258.

2006 **Reno PL**, McBurney DL, Lovejoy CO, Horton WE Jr. Ossification of the mouse metatarsal: differentiation and proliferation in the presence/absence of a defined growth plate. *The Anatomical Record*, 288A:104-118.

2005 **Reno PL**, DeGusta D, Serrat MA, Meindl RS, White TD, Eckhardt RB, Kuperavage AJ, Galik K, Lovejoy CO. Plio-Pleistoce hominid limb proportions: Evolutionary reversals or estimation errors? *Current Anthropology*, 46:575-588.

2005 **Reno PL**, McCollum MA, Meindl RS, Lovejoy CO. The case is unchanged and remains robust: *Australopithecus afarensis* exhibits only moderate skeletal dimorphism. *Journal of Human Evolution*, 49:279-288.

2003 **Reno PL**, Meindl RS, McCollum, Lovejoy CO. Sexual dimorphism of *Australopithecus afarensis* was similar to that of modern humans. *Proceedings of the National Academy of Sciences*, 1000:9404-9409.

2003 Lovejoy CO, McCollum MA, **Reno PL,** Rosenman BA. Developmental biology and human evolution. *Annual Review of Anthropology*, 32:85-109.

2000 **Reno PL**, McCollum MA, Lovejoy CO, Meindl RS. Adaptationism and the anthropoid postcranium: Selection does not govern the length of the radial neck. *Journal of Morphology,* 248:59-67.

1998 Arfken CL, **Reno PL,** Santiago JV, Klein R. Development of proliferative diabetic retinopathy in African-Americans and whites with Type 1 diabetes. *Diabetes Care*, 21:792-795.

1997 **Reno PL**, Arfken CL, Hiens JM, Fisher EB. Factors influencing decision to receive treatment for proliferative diabetic retinopathy. *Diabetes Educator*, 23:653-655.

1995 Arfken CL, **Reno PL**. Epidemiology of racial differences in the rates of development and progression of retinopathy. *Diabetes Spectrum*, 8:175-182.

Book Chapters

Submit Kjosness KM, **Reno PL**. Using comparisons between species and anatomical locations to discover mechanisms of growth plate patterning and differential growth. In C Percival and JT Richtsmeier (Eds.), Building Bones. Cambridge University Press.

Accept **Reno PL**. Evo-devo Sheds Light on Mechanisms of Human Evolution: Limb Proportions and Spines. In J. Boughner and C Rolian (Eds.), *Evolutionary Developmental Anthropology: a postgenomic approach to understanding primate and human evolution*. Hoboken, HJ: Wiley-Blackwell.

Accept Puts DA, Bailey DH, **Reno PL**. Intrasexual Selection in Men. In DM Buss (Ed.), *The Handbook of Evolutionary Psychology*. New York:Wiley & Sons

Book Reviews

2006 "From Biped to Strider: The Emergence of Modern Human Walking, Running, and Resource Transport." D. Jeffrey Meldrum and Charles E. Hilton, eds. *Human Ecology*, 34:731-734.

Abstracts

2013 Kjosness KM, Hines JE, **Reno PL**. Hoxd11 influences growth plate organization in the mammalian pisiform. *FASEB J.* 29. – Finalist for student presentation at American Association of Anatomists.

2014 **Reno PL**. Evo-devo sheds light on mechanisms of human evolution and parallelism in hominoids. *American Journal of Physical Anthropology.* 153(S54):220. - *Invited symposium*

2014 Kjosness KM, Hines JE, Lovejoy CO, **Reno PL**. Making a 'short bone' short: Human pisiform reduction results from the loss of a growth plate. *American Journal of Physical Anthropology.* 153(S54):158. - *Invited symposium*

2013 Kjosness KM, Hines JE, Lovejoy CO, **Reno PL**. The pea-shaped pisiform results from the evolutionary loss of a growth plate. *FASEB J.* 27:520.7.

2011 **Reno PL**, McLean CY, Pollen AP, Bejerano G, Kingsley DM. Human-specific loss of an androgen receptor enhancer is associated with the loss of vibrissae and penile spines. American Journal of Physical Anthropology, Supplement 52:252.

2007 **Reno PL**, Lovejoy CO. The genetics of post-cranial skeletal development: Implications for interpreting primate morphological variation. *American Journal of Physical Anthropology*, Supplement 44:197-198. - *Invited symposium*

2006 Reno PL, Lovejoy CO, Elsey RM, Horton WE. Comparative development of mammalian and alligator growth plate formation. *Developmental Biology*, 295:415.

2005 **Reno PL**, McBurney DL, Lovejoy CO, Horton WE. Comparative analysis of mouse metatarsal ossification and implications for differential skeletal growth. *Integrative and Comparative Biology*, 45:1061.

2005 **Reno PL**, McBurney DL, Lovejoy CO, Horton WE Jr. Comparative analysis of murine metatarsal ossification and implications for differential skeletal growth in primates. *American Journal of Physical Anthropology*, Supplement 40:180.

2005 Lovejoy CO, **Reno PL**, Meindl RS. The skeletal dimorphism of *Australopithecus afarensis*. *American Journal of Physical Anthropology*, Supplement 40:145. - *Invited symposium*

2004 **Reno PL**, McBurney DL, Lovejoy CO, Horton WE Jr. Comparative analysis of ossification in the presence/absence of a defined growth plate. *Journal of Morphology*, 260:321.

2004 **Reno PL**, Meindl RS, McCollum MA, Lovejoy CO. Comparison of “sex blind” dimorphism indices with application to the *A. afarensis* fossil assemblage. *American Journal of Physical Anthropology*. Supplement 38:166.

2003 **Reno PL**, Serrat MA, Meindl RS, Cohn MJ, Lovejoy CO. Hominoids, Hindlimbs and Hox: Implications for hominid evolution. *American Journal of Physical Anthropology*, Supplement 36:189.

2003 Serrat MA, **Reno PL**, Rosenman BA, Lovejoy CO. Developmental Field Fluctuation II: A potential basis for skeletal morphological variation. *American Journal of Physical Anthropology*, Supplement 36:177-78.

2002 **Reno PL**, Kriz MA, McCollum MA, Lovejoy CO, Horton WE Jr. Scanning electron microscopic analysis of regional histomorphological variation within the physis of the primate proximal femur. *American Journal of Physical Anthropology*, Supplement 34:130.

2002 Kriz MA, **Reno PL**, Lovejoy CO. Morphometric variation in proximal femoral development in primates and mammals. *American Journal of Physical Anthropology*, Supplement 34:97-98.

2002 Lovejoy CO, **Reno PL**, Kriz MA, Rosenman, BA. Developmental Field Fluctuation: a potential basis for skeletal morphological variation. American *Journal of Physical Anthropology*, Supplement 34:104.

2001 **Reno PL**, Lovejoy CO, McCollum MA, Hamrick MW, Meindl RS, Cohn MJ. Ontogenetic data suggest the presence of HOXD targets that act as growth scalars in the hominoid forelimb. *American Journal of Physical Anthropology*, Supplement 32:125.

2000 Lovejoy CO, **Reno PL**, McCollum MA, Hamrick MW, Cohn MJ. Evolution of primate hands: Growth scaling registers with posterior HOXD expression. *American Zoologist* 40:1109.

2000 Lovejoy CO, **Reno PL**, McCollum MA, Hamrick MW, Cohn MJ. Evolution of hominoid hands: Growth scaling registers with posterior HOXD expression. *American Journal of Physical Anthropology*, Supplement 30:214.

1999 **Reno PL**, Lovejoy CO, Kern KF, Simpson SW, Meindl RS. Estimation of sexual dimorphism in fossil species including *Australopithecus afarensis*: A new technique and tests of its accuracy using extant hominids. *American Journal of Physical Anthropology*, Supplement 28:231.

1998 **Reno PL**, Lovejoy CO, Meindl RS, McCollum MA. An integrative approach to hominoid forelimb elongation. *American Journal of Physical Anthropology*, Supplement 26:187.

1997 **Reno PL**, McCollum MA, Lovejoy CO. Anthropoid radial neck length and its implications for hominid locomotion. *American Journal of Physical Anthropology*, Supplement 24:197.

Posters

2012 **Reno PL**, McLean CY, Pollen AP, Bejerano G, Kingsley DM. Human-specific loss of an androgen receptor enhancer is associated with the loss of vibrissae and penile spines. *Mid-Atlantic Regional Meeting of the Society for Developmental Biology.* University Park, PA.

2003 **Reno PL**, McBurney DL, Lovejoy CO and Horton WE Jr. Ossification patterns in the presence/absence of a defined growth plate. *Midwest Connective Tissue Workshop.* Chicago, IL.

Invited Meetings and Workshops:

2009 *The First 4 Million Years of Human Evolution*. The Royal Society, London, UK. October 19-20.

2005 *The World Summit on Evolution*, Galapagos Academic Institute for the Arts and Sciences, Universidad San Francisco de Quito, Ecuador. June 9-12.

2004 *The Miocene Hominoid Postcranial Evolution Workshop.* Center for the Study of Human Evolution, New York University. May 19-21.

Invited Lectures

2015 “Genomic and phenotypic approaches to human evo-devo: Penile spine loss and pisiform reduction” presented to the Human Evolutionary Biology department, Harvard University.

2012 "*Australopithecus afarensis* skeletal dimorphism and early hominid reproductive biology." Co-presenter and discussant at the Boston University Dialogues Series, "Does Size Matter? Sexual Dimorphism and Human Evolution."

2011 "Human-specific loss of regulatory DNA and the evolution of human-specific traits" presented to Department of Biology, Duquesne University.

2010 "Developmental Approaches to Human Evolution: Limb Proportions and Spines" presented as the plenary lecture to Genetic and Evolutionary Skeletal Research Initiative UC-Berkeley.

2008 "Evolution of the Human Phenotype" presented to CS273A: A computational tour of the Human Genome, Stanford University.

2003 "Limb Development: Initial Outgrowth and Patterning" presented to ANAT 391/491 Human Embryology, Case Western Reserve University Medical School.

2002 "Limbs I: Outgrowth & Initial Patterning" presented to ANAT 391/491 Human Embryology, Case Western Reserve University Medical School.

2002 "Limbs II: Morphogenesis and Skeletal Development" presented to ANAT 391/491 Human Embryology, Case Western Reserve University Medical School.

Courses Taught:

ANTH 260H: Building the Human Animal, Course developer (to be taught Fall 2015), Pennsylvania State University
ANTH 403: Evolution of Human Walking, Instructor and course developer, Pennsylvania State University.
ANTH 468: Evolution and Development of Human Origins, Instructor and course developer, Pennsylvania State University.
ANTH 021: Introductory Biological Anthropology, Instructor, Pennsylvania State University
ANTH 470H: Our Place in Nature, Instructor, Pennsylvania State University.
Human Development and Structure, Lecturer and Lab Instructor, Northeastern Ohio Universities College of Medicine, Rootstown, OH.
ANTH 38490 Quantitative Anthropology (Statistics), Instructor, Kent State University.

Theses Supervised

Primary Advisor

Kelsey Kjosness, In progress, *Development of the hominoid pisiform and the role of Hox11 genes in specifying the pisiform growth plate*. Ph.D. Department of Anthropology, The Pennsylvania State University.

Allison Machnicki, In progress, “Developmental approaches to evolution of hominoid back evolution.” Ph.D. Department of Anthropology, Ph.D. Department of Anthropology, The Pennsylvania State University. Recipient of an NSF Graduate Research Fellowship.
Catherine Roberts, In progress. MA, The Pennsylvania State University.
Andrew Georgeson, 2013, “Milligan’s trichrome stain for use in comparing the development of penile spines to hair and nails in mice.” BS, Schreyer Honors College, The Pennsylvania State University.

Committee Member

Simone Sukdeo, In progress, Ph.D., Department of Anthropology, Penn State.
Kevin Flaherty, In progress, Ph.D., Department of Anthropology, Penn State
Scott Hergenrother, 2015, Ph.D., Duquesne University.
Nergiz Dogan, 2014, Ph.D., Biochemistry, Microbiology, and Molecular Biology, Penn State.
Ben Connor, BS, Schreyer Honors College, The Pennsylvania State University.

Professional Affiliations:

American Association of Anatomists
American Association of Physical Anthropologists
Society of Developmental Biology
Society for Integrative and Comparative Biologists
Sigma Xi

References available upon request