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RESEARCH INTERESTS

Human evolution; longevity; brain evolution; sexual dimorphism; data resampling; time-series conversion of images

EDUCATION

Ph.D. in Anthropology, University of Michigan, Ann Arbor, Michigan (1999)

Thesis: *Evolution of Human Sexual Dimorphism: Using Assigned Resampling Method to Estimate Sexual Dimorphism When Individual Sex is Unknown* (Chair: Milford H. Wolpoff)

M.A. in Anthropology, University of Michigan, Ann Arbor, Michigan (1993)

B.A. in Archaeology, Seoul National University, Korea (1989)

Thesis: *Mineral Analysis of Korean Prehistoric Potsherds Using SEM (Scanning Electron Microscopy) and XRD (X-Ray Diffraction) Methods*

APPOINTMENTS

Associate Professor, Department of Anthropology, University of California at Riverside (July 2007-current)

- Cooperating Faculty Member, Evolution, Ecology, and Organismal Biology Program, Department of Biology, University of California at Riverside (February 2009-current)

Assistant Professor, Department of Anthropology, University of California at Riverside (September 2001-June 2007)

- Visiting Scholar, Department of Anthropology, Chonnam National University, Gwangju, Korea (Summer 2004)

Assistant Professor, Department of Anthropology, Indiana University of Pennsylvania (August 2000-August 2001)

Research Associate, Department of Biosystems Science, Graduate University for Advanced Studies, Hayama,

Kanagawa 240-0193, Japan (Supervisor, Naoyuki Takahata, Professor and Dean) (April 1999-August 2000)

PUBLICATIONS

Articles

(in press) Zhu Q, Wang X, Keogh E, Lee S-H. An efficient and effective similarity measure to enable data mining of petroglyphs. *Data Mining and Knowledge Discovery*.

(in press) Lee S-H. Effect of sample size in STET, a method to test conspecificity for pairs of unknown species. *PaleoAnthropology*.

(in press) Wolpoff MH, Lee S-H. The African origin of recent humanity. In: *African Genesis: Perspectives on*

- Hominid Evolution*. Reynolds SC, Gallagher A, editors. Witswatersrand University Press.
- (2010) Lee S-H. Human longevity and world population. In: *21st Century Anthropology: A Reference Handbook*. H. James Birx, editor. Thousand Oaks, CA: Sage. Pp. 970-976.
- (2009) Keogh E, Wei L, Xi X, Vlachos M, Lee S-H, Protopapas P. Supporting exact indexing of shapes under rotation invariance with arbitrary representations and distance measures. *The VLDB Journal* 18(3):611-630.
- (2009) Keogh E, Ye L, Rampley T, Lee S-H. Automatic construction of typologies for massive collections of projectile points. In: *Making History Interactive: Computer Applications and Quantitative Methods in Archaeology. Proceedings of the 37th Annual International Conference*. Frischer B, Crawford JW, Koller D, editors. Williamsburg, VA: Archaeopress. Pp. 146-157.
- (2009) Zhu Q, Wang X, Keogh E, Rampley T, Lee S-H. Towards indexing and data mining all the world's rock art. . In: *Making History Interactive: Computer Applications and Quantitative Methods in Archaeology. Proceedings of the 37th Annual International Conference*. Frischer B, Crawford JW, Koller D, editors. Williamsburg, VA: Archaeopress. Pp. 397-408.
- (2007) Keogh E, Lin J, Lee S-H, Van Herle H. Finding the most unusual time series subsequence: algorithms and applications. *Knowledge and Information Systems* 11(1):1-27. (<http://www.springerlink.com/content/105441/>)
- (2007) Keogh E, Lonardi S, Ratanamahatana CA, Wei L, Lee S-H, Handley H. Compression-based data mining of sequential data. *Data Mining and Knowledge Discovery* 14(1):99-129. (<http://www.springerlink.com/content/100254/>)
- (2007) Lee S-H. Hominid evolution: new research trends in paleoanthropology. *Journal of the Korean Archaeological Society* 64:122-171. ((2007) 이상희. 고인류학 연구의 최근 동향을 중심으로 본 인류의 진화. 한국고고학보 64:122-171. (영문초록)) (In Korean, with English Abstract)
- (2007) Lee S-H, Wolpoff MH. Herto and the Neandertals: What can a 160,000-year-old African tell us about European Neandertal evolution? In: *Human Origins, Genome and People of India: Genomic, Palaeontological and Archaeological Perspectives*. AR Sankhyan and VR Rao, editors. New Delhi (India): Allied Publishers. Pp. 329-336.
- (2007) Wei L, Keogh E, Xi X, Lee S-H. Supporting anthropological research with an efficient rotation invariant shape similarity measurement. *Journal of Royal Society Interface* 4(13):207-222. (<http://publishing.royalsociety.org/index.cfm?page=1572>)
- (2006) Caspari R, Lee S-H. Is human longevity a consequence of cultural change or modern biology? *American Journal of Physical Anthropology* 129(4):512-517. (<http://www3.interscience.wiley.com/journal/28130/home>)
- (2006) Keogh E, Wei L, Xi X, Lee S-H, Vlachos M. LB_Keogh supports exact indexing of shapes under rotation invariances with arbitrary representations and distance measures. *Proceedings of the 32nd International Conference on Very Large Data Bases*. Pp. 882-893.
- (2006) Lee S-H. Patterns of dental sexual dimorphism in Krapina and Předmostí: a new approach. *Periodicum Biologorum* 108(4):417-424.
- (2006) Wolpoff MH, Lee S-H. Variation in the habiline crania—must it be taxonomic? *Human Evolution* 21(1):71-84.

- (2005) Ahern JCM, Hawks JD, Lee S-H. Neandertal taxonomy reconsidered . . . again: a response to Harvati *et al* (2004). *Journal of Human Evolution* 49(6):647-652. (<http://www.sciencedirect.com/science/journal/00472484>)
- (2005) Caspari R, Lee S-H. Taxonomy and longevity: a reply to Minichillo (2005). *Journal of Human Evolution* 49(5):646-649. (<http://www.sciencedirect.com/science/journal/00472484>)
- (2005) Caspari R, Lee S-H. Are OY ratios invariant? A reply to Hawkes and O'Connell (2005). *Journal of Human Evolution* 49(5):654-659. (<http://www.sciencedirect.com/science/journal/00472484>)
- (2005) Lee S-H. Is variation in cranial capacity of the Dmanisi sample too high to be from one species? *American Journal of Physical Anthropology* 127(3):263-266. (<http://www3.interscience.wiley.com/journal/28130/home>)
- (2005) Lee S-H. Patterns of size sexual dimorphism in *Australopithecus afarensis*: Another look. *Homo-Journal of Comparative Human Biology* 56(3):219-232.
- (2005) Lee S-H, Wolpoff MH. Habilidad variation: a new approach using STET. *Theory in Biosciences* 124(1):25-40.
- (2004) Caspari RE, Lee S-H. Older age becomes common late in human evolution. *Proceedings of the National Academy of Sciences of the United States of America* 101(30):10895-10900. (<http://www.pnas.org/>)
- (2003) Lee S-H, Wolpoff MH. The pattern of Pleistocene human brain size evolution. *Paleobiology* 29(2):186-196. (<http://paleobiol.geoscienceworld.org/archive/>)
- (2002) Ahern JCM, Lee S-H, Hawks JD. The Late Neandertal supraorbital fossils from Vindija Cave, Croatia: a biased sample? *Journal of Human Evolution* 43(3):419-432. (<http://www.sciencedirect.com/science/journal/00472484>)
- (2001) Wolpoff MH, Lee S-H. The Late Pleistocene human species of Israel. *Bulletins et Memoires de la Societe d'Anthropologie de Paris* 13(3/4):291-310.
- (2001) Lee S-H. Assigned Resampling Method: A new method to estimate size sexual dimorphism in samples of unknown sex. *Przeeglqd Antropologiczny – Anthropological Review* 64(1):21-39.
- (2001) Takahata N, Lee S-H, Satta Y. Testing multiregionality of modern human origins. *Molecular Biology and Evolution* 18(2):172-183. (<http://mbe.oxfordjournals.org/>)
- (2000) Hawks J, Hunley K, Lee S-H, Wolpoff MH. Population bottlenecks and Pleistocene human evolution. *Molecular Biology and Evolution* 17(1):2-22. (<http://mbe.oxfordjournals.org/>)

Book Reviews

- (in press) Lee S-H. Book review: THE BONE READERS: SCIENCE AND POLITICS IN HUMAN ORIGINS RESEARCH, by Claudio Tuniz, Richard Gillespie, and Cheryl Jones (2009) Walnut Creek, CA: Left Coast Press. *Journal of Anthropological Research*.
- (2001) Lee S-H. Book review: HUMAN PALEOBIOLOGY, by Robert B. Eckhardt (2000) New York: Cambridge University Press. ISBN 0-521-45160-4. *American Journal of Physical Anthropology* 115(4):388-389.

Abstracts

- (2010) Caspari R, Lee S-H, van Arsdale A. Implications of reduced mortality risk for late Pleistocene humans. *American Journal of Physical Anthropology* 141(S50):79.
- (2009) Lee S-H, Caspari R. Extracting adult survivorship information from fossil samples: the uses and limitations of

- OY ratios. *American Journal of Physical Anthropology* 138(S48):264.
- (2007) Lee S-H. Exploring STET: a new method for examining variation and species. *American Journal of Physical Anthropology Supplement* 44:153.
- (2006) Lee S-H. A new approach to dental sexual dimorphism in the Krapina Neandertals. *American Journal of Physical Anthropology Supplement* 42:119-120.
- (2005) Caspari R, Lee S-H. Longevity in the Middle Paleolithic: Did modern humans live longer than Neandertals? *American Journal of Physical Anthropology Supplement* 40:85.
- (2005) Kesterke M, Ahern JCM, Lee S-H, Hawks JD. Is the Vindija late Neandertal mandibular sample biased? *American Journal of Physical Anthropology Supplement* 40:129.
- (2005) Lee S-H, Frayer DW. Changes in sexual dimorphism in Europeans in the last 30,000 years. *American Journal of Physical Anthropology Supplement* 40:136.
- (2004) Caspari R, Lee S-H. Longevity and the evolution of modernity. *American Journal of Physical Anthropology Supplement* 38:73-74.
- (2004) Lee S-H, Frayer DW. Continuous changes in lower limb lengths of Upper Paleolithic Mesolithic Europeans. *PaleoAnthropology* 1:A74.
- (2004) Lee S-H. Sexual dimorphism in the Hadar *A. afarensis* sample: Another look. *American Journal of Physical Anthropology Supplement* 38:133.
- (2003) Lee S-H. Is the variation in cranial capacity of the Dmanisi sample too high to be from one species? (available on the web: <http://www.paleoanthro.org/abst2003.htm>)
- (2003) Caspari R, Lee S-H. Is old age really old? An analysis of longevity in the hominid fossil record. (available on the web: <http://www.paleoanthro.org/abst2003.htm>)
- (2003) Lee S-H, Wolpoff MH. The Late Pleistocene human species of Levant. *American Journal of Physical Anthropology Supplement* 36:137-138.
- (2003) Hofbauer A, Ahern JCM, Lee S-H. Craniofacial remodeling during adulthood: the supraorbital region. *American Journal of Physical Anthropology Supplement* 36:115.
- (2002) Lee S-H, Wolpoff MH. Evolutionary patterns in Pleistocene human brain size. *American Journal of Physical Anthropology Supplement* 34:100.
- (2002) Lee S-H, Wolpoff MH. Pattern of brain size increase in Pleistocene *Homo*. *Journal of Human Evolution* 42(3):A19-A20.
- (2001) Lee S-H. Patterns of skeletal sexual dimorphism in human, chimpanzee, and gorilla. *Journal of Human Evolution* 40(3):A13.
- (1998) Lee S-H. A new method to estimate sexual dimorphism in samples of unknown sex. *American Journal of Physical Anthropology Supplement* 26:148.
- (1998) Ahern JCM, Hawks JD, Lee S-H. Patterns of variation within two samples of south-central European Neandertals. *American Journal of Physical Anthropology Supplement* 26:61-62.
- (1998) Lee S-H. Evolutionary trends in sexual dimorphism of cranial capacity in Pleistocene *Homo*. *Journal of Human*

Evolution 34(3):A12.

(1995) Lee S-H. Variability in *Australopithecus afarensis*: Does sexual dimorphism explain the humeral variability in *Australopithecus afarensis*? *American Journal of Physical Anthropology Supplement* 20:132.

(1994) Lee S-H. Patterns of evolution in *Homo erectus* cranial capacity. *American Journal of Physical Anthropology Supplement* 18:127-128.

FELLOWSHIPS AND GRANTS

Committee on Research Fellowship, University of California at Riverside (2009) \$4,750

Information and Intelligent Systems, NSF #0803410 (2008-2011) "Tools to Mine and Index Trajectories of Physical Artifacts" \$805,000 (co-PI)

Interdisciplinary Teams and Networks, University of California at Riverside (2007) "Data Mining in Native American Artifact Data Collections" \$9,751 (co-PI)

Regents' Faculty Fellowship, University of California (2002, 2005)

Academic Senate Research Grant, University of California at Riverside (2001, 2002, 2003, 2004, 2005, 2006, 2009, 2010)

Grants-in-Aid of Research, Sigma Xi (1997)

Barbour Scholarship, University of Michigan (1992)

Graduate Fellowship, Korean Foundation of Advanced Studies, Korea (1990-1992, 1994-1997)

PRESENTATIONS AT PROFESSIONAL MEETINGS

International

(2009) Origin of modern humans in Northeast Asia. International Symposium on Paleoanthropology in Commemoration of the 80th Anniversary of the Discovery of the First Skull of Peking Man and the First Asian Conference on Quaternary Research. Beijing, China.

(2000) Testing the multiregionality of modern human origins (with Y Satta and N Takahata). Germany-Japan Seminar in Methods of Reconstructing Evolutionary History of Genes, Mishima, Japan.

(1999) Constructing a database of human nucleotide diversity and a demographic model of the Multiregional hypothesis on modern human origins (with N Takahata). Annual Meeting of the Genetics Society of Japan, Hiroshima, Japan.

(1998) Human sexual dimorphism: an evolutionary approach. Korean Society of Cultural Anthropologists Meeting, Seoul, Korea. (In Korean)

US and Canada

(2010) Implications of reduced mortality risk for late Pleistocene humans (with R Caspari and A van Arsdale A). American Association of Physical Anthropologists Meeting, Albuquerque, New Mexico.

(2009) Automatic construction of typologies for massive collections of projectile points and other cultural artifacts (with E Keogh, L Ye, and T Rampley). Annual International Conference on Computer Applications and Quantitative Methods in Archaeology, Williamsburg, Virginia.

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- (2009) Extracting adult survivorship information from fossil samples: the uses and limitations of OY ratios (with R Caspari). American Association of Physical Anthropologists Annual Meeting, Chicago, Illinois.
- (2009) Towards indexing and data mining all the world's rock art (with E Keogh, Q Zhu, X Wang, T Rampley). Annual International Conference on Computer Applications and Quantitative Methods in Archaeology, Williamsburg, Virginia.
- (2009) Variation in life history variables. American Association for the Advancement of Science Annual Meeting, Chicago, Illinois.
- (2006) A new approach to dental sexual dimorphism in the Krapina Neandertals. American Association of Physical Anthropologists Meeting, Anchorage, Alaska.
- (2006) How musical were the Neandertals? Call for an interdisciplinary collaboration. Sound, Environment and Connective Technology Symposium, Riverside, California.
- (2005) Changes in sexual dimorphism in Europeans in the last 30,000 years (with D Frayer). American Association of Physical Anthropologists Meeting, Milwaukee, Wisconsin.
- (2005) Longevity in the Middle Paleolithic: Did modern humans live longer than Neandertals? (with R Caspari) American Association of Physical Anthropologists Meeting, Milwaukee, Wisconsin.
- (2005) Is the Vindija late Neandertal mandibular sample biased? (with M Kesterke, JCM Ahern, and JD Hawks) American Association of Physical Anthropologists Meeting, Milwaukee, Wisconsin.
- (2004) Where in time are old hominids? (with R Caspari) American Anthropological Association Meeting, Atlanta, Georgia.
- (2004) Continuous changes in lower limb lengths of Upper Paleolithic Mesolithic Europeans (with D Frayer). Paleoanthropology Society Meeting, Montreal, Quebec, Canada.
- (2004) Sexual dimorphism in the Hadar *A. afarensis* sample: Another look. American Association of Physical Anthropologists Meeting, Tampa, Florida.
- (2004) Longevity and the evolution of modernity (with R Caspari). American Association of Physical Anthropologists Meeting, Tampa, Florida.
- (2003) Is the variation in cranial capacity of the Dmanisi sample too high to be from one species? Paleoanthropology Society Meeting, Tempe, Arizona.
- (2003) Is old age really old? An analysis of longevity in the hominid fossil record (with R Caspari). Paleoanthropology Society Meeting, Tempe, Arizona.
- (2003) The Late Pleistocene human species of Levant (with MH Wolpoff). American Association of Physical Anthropologists Meeting, Tempe, Arizona.
- (2003) Craniofacial remodeling during adulthood: the supraorbital region (with A Hofbauer and JCM Ahern). American Association of Physical Anthropologists Meeting, Tempe, Arizona.
- (2002) Evolutionary patterns in Pleistocene human brain size (with MH Wolpoff). American Association of Physical Anthropologists Meeting, Buffalo, New York.
- (2002) Pattern of brain size increase in Pleistocene Homo (with MH Wolpoff). Paleoanthropology Society Meeting,

Denver, Colorado.

- (2001) Patterns of skeletal sexual dimorphism in human, chimpanzee, and gorilla. Paleoanthropology Society Meeting, Kansas City, Missouri.
- (1998) A new technique for estimating sexual dimorphism in samples of unknown sex. American Association of Physical Anthropologists Meeting, Salt Lake City, Utah.
- (1998) Patterns of variation within two samples of south-central European Neandertals (with JCM Ahern and JD Hawks). American Association of Physical Anthropologists Meeting, Salt Lake City, Utah.
- (1998) Evolutionary Trends in sexual dimorphism of cranial capacity in Pleistocene *Homo*. Paleoanthropology Society Meeting, Seattle, Washington.
- (1995) Variability in *Australopithecus afarensis*: Does sexual dimorphism explain the humeral variability in *Australopithecus afarensis*? American Association of Physical Anthropologists Meeting, Oakland, California.
- (1994) Patterns of evolution in *Homo erectus* cranial capacity. American Association of Physical Anthropologists Meeting, Denver, Colorado.
- (1993) Evolutionary trends in *Homo erectus* cranial capacity. Paleoanthropology Society Meeting, Toronto, Canada.

INVITED LECTURES

- “Changes in Brain Size and Human Evolution”, Anthropology Symposium “The Brain and Evolution”, California State University at Fullerton, 4/10/2010
- “Evolution of Human Longevity”, Biology Seminar, Department of Biology, University of California at Riverside, 2/25/2010
- “Excavating Data: Fossils in Human Evolution”, Hewett Club Lecture Series, Department of Earth Sciences, University of California at Riverside, 3/3/2009
- “Old Is Young: Longevity in Human Evolution”, Center for Behavior, Evolution, and Culture Speaker Series, UCLA, 4/25/2005
- “Old Is Young: Longevity in Human Evolution”, Anthropology Club, University of California at Riverside, 2/10/2005
- “Old Is Young: Longevity in Human Evolution”, Biology Colloquium, Department of Biology, University of California at Riverside, 11/18/2004
- “Getting Old”, Osher Lifelong Learning Institute, University of California at Riverside Extension, 10/22/2004
- “Biological Anthropology: What Makes Us Humans?”, GNUCR, Korea, 7/24/2004
- “Bones”, Honam Culture Research Center, Korea, 7/16/2004

PROFESSIONAL SERVICE

- Chair, Symposium on Sexual Dimorphism, Annual Meeting of the American Association of Physical Anthropologists (2005)
- Student Award Committee, Annual Meeting of the American Association of Physical Anthropologists (2004, 2005, 2006)

Member, External Review Committee, California State University at Fullerton (2010)

Member, Program Committee, Annual Meeting of the American Association of Physical Anthropologists (2011)

ASSOCIATION MEMBERSHIPS

American Anthropological Association (1997-), *life-time member*

American Association for the Advancement of Science (2008-)

American Association of Physical Anthropologists (1990-), *life-time member*

Paleoanthropology Society (1992-)

Sigma Xi, The Scientific Research Society (2002-)

TEACHING EXPERIENCE

Lower Division Undergraduate:

Introduction to anthropology (four-field)

Introduction to biological anthropology

Upper Division Undergraduate:

Human paleontology

Evolution of the first hominins

Evolution of the genus *Homo*

Research methods in biological anthropology

Human osteology

Advanced human osteology

Biomedical anthropology

Human microevolution

Graduate Seminars:

Modern human origins

Recent human evolution

Evolution of human life history

Biocultural perspectives on human life history

Sex and human evolution

Darwinian medicine

Undergraduate Seminars:

Envisioning Neandertal cave-women

Myths, histories, and science of origins

Cannibalism

Neandertals