

Kelsey Elissa Witt Dillon

Department of Natural Sciences
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Employment

2017-present University of California, Merced – Merced, CA
Postdoctoral Researcher
PI: Dr. Emilia Huerta-Sanchez

Education

2012-2017 University of Illinois – Urbana-Champaign, IL
Ph. D. in Evolution, Ecology and Conservation Biology
PI: Dr. Ripan Malhi
Dissertation Title: “A Demographic and Dietary History of Ancient Dogs in the Americas Using Ancient DNA”

2008-2012 Texas A&M University – College Station, TX
B.S. in Genetics with minors in Anthropology and Japanese
Graduated with Honors

Professional Societies

2012-2017 UIUC Graduates in Ecology, Evolutionary Biology and Evolution
(Ecolunch coordinator 2014-2015, President 2015-2016)

2013-2014 Midwest Archaeological Society

2014-present American Association of Anthropological Genetics

2015-present American Association of Physical Anthropologists

2015-present Society for American Archaeologists

2018-present Society for Molecular Biology and Evolution

Publications

2019 Julie M. Schablitsky, **Kelsey E. Witt**, Jazmin Ramos Madrigal, Martin R. Ellegaard, Ripan S. Malhi, and Hannes Schroeder. *Ancient DNA Analysis of Nineteenth Century Tobacco Pipe from a Maryland Slave Quarter*. *Journal of Archaeological Science* **105**: 11-18.

2019 **Kelsey E. Witt**, and Emilia Huerta-Sánchez. *Convergent evolution in human and domesticate adaptation to high-altitude environments*. *Philosophical Transactions of the Royal Society B: Biological Sciences*. In press.

- 2018 Maire Ni Leathlobhair*, Angela R. Perri*, Evan K. Irving-Pease*, **Kelsey E. Witt***, Anna Linderholm*, [and 36 others]. *The Evolutionary History of Dogs in the Americas*. *Science* **361** (6397): 81-85.
- 2018 Jessica R. Brandt, Peter J. Van Coeverden de Groot, **Kelsey E. Witt**, Ripan S. Malhi, Paige K. Engelbrektsson, Kristopher M. Helgen, Oliver A. Ryder and Alfred L. Roca. *Genetic structure and diversity among historic and modern populations of the Sumatran rhinoceros (*Dicerorhinus sumatrensis*)*. *Heredity* **109** (5): 553-565.
- 2015 **Kelsey E. Witt**. *Ancient DNA Sequencing of Dogs from the American Bottom*. *Illinois Antiquity* **50** (3): 14-15.
- 2015 **Kelsey E. Witt**, Kathleen Judd, Colin Grier, Timothy A. Kohler, Scott G. Ortman, Andrew Kitchen, Brian M. Kemp, and Ripan S. Malhi. *DNA Analysis of ancient dogs in the Americas: Determining possible founding haplotypes and reconstructing population histories*. *Journal of Human Evolution* **79**:105-118.

*: equal contributions

Publications in Prep/Review

- 2019 Lu Yao, **Kelsey Witt**, Hongjie Li, Jonathan Rice, Nelson Salinas, Bob Martin, Emilia Huerta-Sanchez, Ripan Malhi. *Population genetics of wild *Macaca fascicularis* with low-coverage shotgun sequencing of museum specimens*. In review.
- 2019 Jessica A. Oswald, Julia M. Allen, **Kelsey E. Witt**, Ryan Folk, Nancy A. Albury, David W. Steadman, and Robert T. Guralnick. *Ancient DNA from a 2,500-year-old Caribbean fossil places an extinct bird (*Caracara creightoni*) in a phylogenetic context*. In review.
- 2018 Mary L. Simon, Kristin M. Hedman, Thomas E. Emerson, Mathew A. Fort, and **Kelsey E. Witt**. *Cahokia and Corn: Multidisciplinary Evidence for the Timing and Intensity of Maize Consumption in Western Illinois*. In revisions.
- 2018 **Kelsey E. Witt**, Andrew Kitchen, Kristin M. Hedman, John R. Johnson, Kelsey Noack Myers, [and 9 others]. *Identifying Parallels between Ancient American dogs and Native Americans using Mitochondrial Genomes*. In prep, draft available upon request.

Preprints

2018 Liisa Loog, Olaf Thalmann, Mikkel-Holder S. Sinding, Verena J. Schuenemann, Angela Perri, [and 31 other authors including **Kelsey E. Witt**]. *Modern wolves trace their origin to a late Pleistocene expansion from Beringia*. bioRxiv 370122; doi: <http://doi.org/10.1101/370122>.

Awards

2017 UIUC Graduates in Ecology and Evolutionary Biology Student Symposium: Best Doctoral Candidate Student Presentation

2014 UIUC Graduates in Ecology and Evolutionary Biology Student Symposium: Best Pre-Prelims or Master's Student Presentation

2012-2014 UIUC IGERT fellow for Vertically-Integrated Training in Genomics program

Grants Awarded

2018 Society for Molecular Biology and Evolution Young Investigator Travel Award

2016 Wenner Gren Foundation Dissertation Fieldwork Grant: "Using Ancient Dog DNA to Test Models of Human Migration History"

2015 NSF Doctoral Dissertation Research Improvement Grant: "Human Population Inferences Via Canine Genetics"

2014 Illinois State Archaeological Survey's Archaeological Technologies and Ancient Materials Mini-Grant

2014 UIUC Graduate College Dissertation Travel Grant

2014 UIUC School of Integrative Biology Harley J. Van Cleave Research Award

2013 Illinois State Archaeological Survey's Archaeological Technologies and Ancient Materials Mini-Grant

2012 NSF IGERT: Vertically-Integrated Training with Genomics Fellow

Invited Talks

2015 "Ancient DNA Analysis of dogs in the Pre-Contact Americas" at Millikin University, Decatur IL, February 28th.

Conference Participation

- 2018 **Kelsey E. Witt**, Jonathan Rice, Emilia Huerta-Sanchez. "Characterizing archaic hominids' contribution to genetic variation in modern human populations following the out-of-Africa migration" at the Society for Molecular Biology and Evolution Annual Meeting, Yokohama, Japan.
- 2018 **Kelsey E. Witt**, Laurent A. F. Frantz, Greger Larson, Angela R. Perri, Ripan S. Malhi. "Genome Sequencing of Ancient American Dogs" at the Society for American Archaeologists 83rd Annual Meeting, Washington DC
- 2018 **Kelsey E. Witt**, Julie M. Schablitsky, Jazmin Ramos Madrigal, Martin R. Ellegaard, Hannes Schroeder, Ripan S. Malhi. "Ancient DNA Analysis of Nineteenth Century Pipe Stems Recovered from a Maryland Slave Quarter" at 87th American Association of Physical Anthropologists Annual Meeting, Austin TX
- 2017 **Kelsey E. Witt** and Ripan S. Malhi. "Using Mitogenomes to Understand Dog Population History in the Americas" at 86th American Association of Physical Anthropologists Annual Meeting, New Orleans LA
- 2017 **Kelsey E. Witt**, Julie M. Allen, Steven R. Kuehn, Mary L. Simon, and Ripan Malhi. "Dietary DNA Analysis of Mississippian Dog Coprolites" at the Society for American Archaeologists 82nd Annual Meeting, Vancouver BC
- 2017 Jessica R. Brandt, Kai Zhao, Isabella Apriayana, Yasuko Ishida, Cynthia C. Steiner, **Kelsey E. Witt**, Peter T. Boag, Burton K. Lim, Ripan S. Malhi, Herawati Sudoyo, Helena Suryadi, Oliver A. Ryder, Peter J. Van Coeverden de Groot and Alfred L. Roca. "Developing genetic tools for conservation management of Asian rhinos" at the Plant and Animal Genome Conference, San Diego CA
- 2016 Jessica R. Brandt, Kai Zhao, Isabella Apriayana, Yasuko Ishida, Cynthia C. Steiner, **Kelsey E. Witt**, Peter T. Boag, Burton K. Lim, Ripan S. Malhi, Herawati Sudoyo, Helena Suryadi, Oliver A. Ryder, Peter J. Van Coeverden de Groot and Alfred L. Roca. "Novel microsatellite markers for fecal genotyping of Javan and Sumatran rhinoceros" at the 15th International Elephant and Rhino Conservation and Research Symposium, Singapore

- 2016 **Kelsey E. Witt**, Inge Lundstrom, Ripan S. Malhi. "Mitogenome sequencing of ancient dogs in the Americas" at the Society for American Archaeologists 81st Annual Meeting, Orlando FL
- 2016 **Kelsey E. Witt**, Ripan S. Malhi. "Genetic Comparison of Ancient Dog Populations in the Americas" at 4th ATAM Science and Archaeology Symposium, Urbana IL
- 2015 **Kelsey E. Witt**, Inge Lundstrom, Ripan S. Malhi. "Mitogenome Sequencing of Ancient Dogs in the Americas Reveals New Variation" at The 8th International Conference on Advances in Canine and Feline Genomics and Inherited Diseases, Cambridge UK
- 2015 **Kelsey E. Witt**, Ripan S. Malhi. "Complete mitogenome sequencing of Late Woodland domesticated dogs from Janey B. Goode" at 84th American Association of Physical Anthropologists Annual Meeting, St. Louis MO
- 2014 Kelsey Noack Myers, **Kelsey E. Witt**, Elizabeth L. Watts-Malouchos. "Ancient Canine DNA: Implications for Late Woodland and Mississippian (AD 600-1400) Relatedness, Interactions, and Movements in the Midwest." At 2014 Southeastern Archaeological Conference
- 2014 **Kelsey E. Witt**, Kelsey Noack-Myers, Elizabeth L. Watts-Malouchos. "Ancient Canine DNA: Implications for Late Woodland and Mississippian (AD 600-1400) Populations and Relatedness." At 2014 Midwest Archaeological Conference
- 2014 **Kelsey E. Witt**, Ripan S. Malhi. "Ancient domestic dog diversity in the Americas: A mitochondrial DNA analysis of pre-European contact dogs" at 83rd American Association of Physical Anthropologists Annual Meeting, Calgary AB
- 2014 **Kelsey E. Witt**, Ripan S. Malhi. "Genetic Relationships Between Ancient Dogs in the Americas" at Illinois State Archaeological Survey's Ancient Technologies and Archaeological Materials (ATAM) Program's Science and Archaeology Symposium, February 21st
- 2014 **Kelsey E. Witt**, Kathleen Judd, Brian M. Kemp, Ripan S. Malhi. "Ancient DNA Analysis of Dogs from Southern Illinois" at Graduates in Ecology and Evolutionary Biology (GEEB) Student Symposium, February 7th

2013 **Kelsey Witt**, Ripan S. Malhi. "Ancient DNA analysis of Late Woodland dogs from Janey B. Goode" at 2013 Midwest Archaeological Conference, October 25th

2013 **Kelsey E. Witt**. "DNA Analysis of Ancient North American Dogs" at Summer Internship for Native Americans in Genomics, August 7th

Campus Talks

2017 "A History of Ancient Dogs in the Americas" Program in Ecology, Evolution and Conservation Biology Seminar at the University of Illinois at Urbana-Champaign, April 29th.

Teaching Experience

2016 TA for IB204: Genetics, in fall of 2016 semester. Led 2 3-hour weekly labs of 20 students each, facilitating experiments and discussion, as well as design of scientific papers and presentations. Held office hours and exam reviews and graded assignments. Ranked as "Excellent Teaching Assistant" by students. Supervisors: Dr. Amy Marshall-Colon and Dr. Katy Heath

2016 TA for IB302: Evolution, in spring 2016 semester. Led 2 3-hour weekly labs of 20 students each, facilitating experiments and discussion, held office hours and exam reviews and graded all assignments. Ranked as "Excellent Teaching Assistant" by students. Supervisors: Dr. Rebecca Fuller and Dr. Stewart Berlocher

2015 Developed a learning guide for "Human Population Growth and its Impact on Genetic Variation" lecture by Andrew Clark for Henry Stewart Talks series

2014 TA for IB150: Organismal and Evolutionary Biology. Led 4 1-hour weekly discussion sessions of 20 students each, held office hours and exam reviews and graded all assignments. Ranked as "Excellent Teaching Assistant" by students. Supervisor: Dr. Ben Clegg.

Service to Profession

2014-2017: Assistant Editor, Human Biology

Department Service

2013-2014: PEEC Seminar Committee Member

2014-2015: GEEB Ecolunch Coordinator, GEEB Symposium Judge

2015-2016: GEEB President

Professional Skills

Research

Lab techniques: DNA extraction and purification, PCR, gel electrophoresis, library building, DNA capture, Illumina sequencing and sequence analysis

Experience working in an ancient DNA lab with clean-room environment

Computational Techniques: Creating a computational pipeline to process raw sequence reads, using a cluster for sequence analysis, installing software and managing files on a cluster, creating Python and bash scripts to process files

Software

DNA Sequence Read Processing: Bowtie, Samtools, bwa

Sequence Editing: Geneious, Bioedit, Sequencher, BWA, Samtools

DNA Analysis: MEGA, Arlequin, NETWORK, BEAUTI, BEAST, Tracer, Figtree, BLAST, Muscle, Mafft, RAxML, MEGAN, GATK, angsd

Programming Languages: Experience with R, Python, Bash, and Unix

Reference Contact Information

Ripan Malhi – PhD advisor

Associate Professor, Department of Anthropology, University of Illinois at Urbana-Champaign
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Urbana, IL 61801

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Emilia Huerta-Sanchez – Postdoctoral advisor

Assistant Professor, Ecology and Evolutionary Biology, Brown University

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80 Waterman St.

Providence, RI 02912

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Julie Allen – mentor and collaborator

Assistant Professor, Department of Biology, University of Nevada – Reno

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