

Activity	Room	Time	Session #	Session type
<b>Monday, All</b>				
<b><u>Paleopathology Association</u></b>				
Paleopathology Association Pre-Meeting Excursion	Hilton Lobby	10 a.m.-6 p.m.		
Paleopathology Association Registration	Hilton Lobby	6 p.m.-9 p.m.		
<b>Tuesday, All</b>				
<b><u>American Association of Physical Anthropologists</u></b>				
IDEAS Faculty Reception	Hilton Presidential Suite	8 p.m.-10 p.m.		
<b><u>Human Biology Association</u></b>				
Human Biology Association Executive Committee Meeting	Hilton Center Street A	6 p.m.-10 p.m.		
<b><u>Paleopathology Association</u></b>				
Paleopathology Association Registration	Hilton Hope Foyer	7:45 a.m.-5 p.m.		
Paleopathology Association Workshop 1	Cleveland Museum of Natural History	8:30 a.m.-11 a.m.		
Paleopathology Association Workshop 2	Hilton Center Street A	8:30 a.m.-11 a.m.		
Paleopathology Association Podium Presentations	Hilton Hope BC	1:30 p.m.-5 p.m.		
Paleopathology Student Action Committee	Hilton Hope BC	5:30 p.m.-6:30 p.m.		
Paleopathology Association Banquet and Business Meeting	Hilton Hope E	6:45 p.m.-10 p.m.		
<b>Wednesday, All day</b>				
<b><u>American Association of Physical Anthropologists</u></b>				
The Analysis of Anthropological Networks in R	CC Room 25A	8 a.m.-4 p.m.		
AAPA Executive Committee Meeting	Hilton Center Street A	8 a.m.-5 p.m.		

COD IDEAS Scholars Workshop	Hilton Center Street B	8 a.m.-5 p.m.
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Speaker Ready/Press Room	CC Room 19	9 a.m.-5 p.m.
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An Integrated Approach to Adult Skeletal Age Estimation and Paleodemographic Reconstruction: Going From Bones to Individual Ages and Mortality Patterns	CC Room 24	9 a.m.-4 p.m.
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**Human Biology Association**

Human Biology Association Registration	Hilton Veterans Foyer	8 a.m.-5 p.m.
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Human Biology Association Posters	CC Ballroom BC	9 a.m.-4 p.m.
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**Paleopathology Association**

Paleopathology Association Registration	Hilton Hope Foyer	8 a.m.-5 p.m.
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Paleopathology Association Podium Presentations	Hilton Hope BC	8:30 a.m.-5 p.m.
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Paleopathology Association Posters and Silent Auction	CC Ballroom BC	9 a.m.-4 p.m.
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**Wednesday, Morning**

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**American Association of Physical Anthropologists**

Mentoring the Mentor: A Mentor-Training Workshop	Hilton Superior B	8 a.m.-2 p.m.
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**Human Biology Association**

AJHB Editorial Board Meeting	Hilton Center Street D	7:30 a.m.-9 a.m.
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Human Biology Association Breakout Session 1	Hilton Veterans B	11:30 a.m.- 12:30 p.m.
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Human Biology Association Breakout Session 2	Hilton Veterans C	11:30 a.m.- 12:30 p.m.
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**Wednesday, Afternoon**

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**American Association of Physical Anthropologists**

AJPA Editorial Board Lunch	Hilton Center Street C	noon- 1:30 p.m.
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AAPA Executive Committee and IDEAS Lunch	Hilton Veterans D	noon- 1:30 p.m.
Repatriation in the Digital Age: What can we learn about the ethics of collecting, curating, and using digital representations of the human body?	CC Room 25A	1 p.m.-5 p.m.
Amira-Avizo Software for Physical Anthropology	CC Room 25B	1 p.m.-5 p.m.
Integrating Epigenetic Data with Anthropological Research	CC Room 25B	1 p.m.-5 p.m.
AAPA Registration	CC Ballroom Foyer	2 p.m.-7 p.m.
Student/Early Career Mixer	Hilton Veterans D	5 p.m.-6 p.m.

**Dental Anthropology Association**

Dental Anthropology Association Workshop	Hilton Center Street D	noon-5 p.m.
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**Human Biology Association**

Human Biology Association Plenary Session and Pearl Memorial Lecture	Hilton Veterans C	1 p.m.-6 p.m.
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**Wednesday, Evening**

**American Association of Physical Anthropologists**

Camp AAPA - An Adventure for Kids	Hilton Veterans A	5 p.m.- 10 p.m.
Student/Early Career Mixer	Hilton Veterans D	5 p.m.-6 p.m.
AAPA COD Undergraduate Research Symposium and Reception	CC Ballroom BC	5:30 p.m.-8 p.m.
Opening Reception	Hilton Hope Ballroom	8 p.m.- 11 p.m.

**Human Biology Association**

Human Biology Association Reception and Banquet	Hilton Superior C	6:30 p.m.- 9:30 p.m.
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**Thursday, All day**

**American Association of Physical Anthropologists**

AAPA Registration	CC Ballroom Foyer	7 a.m.-5 p.m.
Family Respite Room	CC Room 15	7 a.m.-7 p.m.

Speaker Ready/Press Room	CC Room 15	7:30 a.m.-5 p.m.		
Camp AAPA - An Adventure for Kids	Hilton Veterans A	7:30 a.m.-7 p.m.		
Exhibits	CC Ballroom BC	9:30 a.m.-7 p.m.		
AAPA Silent Auction	CC Ballroom Foyer	10 a.m.- 7 p.m.		
<b>Primate Behavior</b>	CC Ballroom BC	10 a.m.- 7 p.m.	1	Poster
<b>Primate Diet and Foraging Behavior</b>	CC Ballroom BC	10 a.m.- 7 p.m.	2	Poster
<b>Bone Biology</b>	CC Ballroom BC	10 a.m.- 7 p.m.	3	Poster
<b>Primate Postcranial Morphology and Locomotion</b>	CC Ballroom BC	10 a.m.- 7 p.m.	4	Poster
<b>Hominin Environments, Diet, and Behavior</b>	CC Ballroom BC	10 a.m.- 7 p.m.	5	Poster
<b>Bioarchaeology: Methods and Techniques</b>	CC Ballroom BC	10 a.m.- 7 p.m.	6	Poster
<b>Paleodemography</b>	CC Ballroom BC	10 a.m.- 7 p.m.	7	Poster
<b>Bioarchaeology: Diet, Migration and Identity</b>	CC Ballroom BC	10 a.m.- 7 p.m.	8	Poster

#### **Thursday, Morning**

#### **American Association of Physical Anthropologists**

AAPA Past President's Breakfast	Hilton Center Street B	7 a.m.-9 a.m.		
Non-academic Careers in Physical Anthropology	CC Room 20	10 a.m.- noon		
<b>Deciphering The Denisovans</b>	CC Ballroom A	8 a.m.- noon	9	Podium
<b>Paleodemography, Health, and Disease</b>	CC Room 26 AB	8 a.m.- noon	10	Podium
<b>Primate Social Behavior</b>	CC Room 26 AB	8 a.m.- noon	11	Podium
<b>Primate Craniodental Functional Morphology</b>	CC Room 26 AB	8 a.m.- 11:45 a.m.	12	Podium

<b>Primate Genetics</b>	CC Room 26 C	8 a.m.- noon	13	Podium
<b>Anthroengineering: a biological approach</b>	CC Room 22	8 a.m.- noon	14	Poster
<b>True Grit: the effect of dietary grit on dental wear</b>	CC Room 23	8 a.m.- noon	15	Poster
<b>Biocultural Approaches to the Plasticity of the Human Skeleton</b>	CC Room 24	8 a.m.- noon	16	Poster
<b><u>Human Biology Association</u></b>				
Human Biology Association Registration	Hilton Hope Foyer	7:30 a.m.- 8:30 a.m.		
Human Biology Association Podium Presentations	Hilton Superior A	8:30 a.m.- 11:45 a.m.		

### **Thursday, Afternoon**

#### **American Association of Physical Anthropologists**

Yearbook of Physical Anthropology Editorial Board Meeting	Hilton Hope C	noon-2 p.m.		
Creating an Ad Hoc Early Career Committee	CC Room 20	12:15 p.m.- 2:15 p.m.		
AAPA Science Policy Committee Meeting	Cleveland Now Boardroom	12:15 p.m.- 2:15 p.m.		
AAPA COD - AACT Meeting	Hilton Center Street A	12:15 p.m.- 2:15 p.m.		
AAPA COD LGBTQQIAA Meeting	Hilton Center Street B	12:15 p.m.-2 p.m.		
Navigating the Intercultural Landscape of Gender-Based Harassment and Assault in Fieldwork	CC Room 20	2:30 p.m.- 4:30 p.m.		
AAPA COD International Mixer	Hilton Center Street B	5 p.m.-7 p.m.		

<b>The Missing Dead: Underrepresented Groups in Bioarchaeology and Forensic Anthropology</b>	CC Ballroom A	2:30 p.m.-6 p.m.	17	Podium
<b>Primate hosts and microbial interactions and communities: disease, development and evolution</b>	CC Room 25	2:30 p.m.-6 p.m.	18	Podium
<b>Evolutionary Anatomy, Functional Morphology, and Adaptation</b>	CC Room 21	2:30 p.m.-5:50 p.m.	19	Podium
<b>Genotype - Phenotype Studies</b>	CC Room 26 C	2:30 p.m.-6 p.m.	20	Podium
<b>Teaching Bio Anth Within and Without a Classroom</b>	CC Room 22	2:30 p.m.-6 p.m.	21	Poster
<b>Recent Advancements in the Analysis of Bone Microstructure</b>	CC Room 23	2:30 p.m.-6 p.m.	22	Poster
<b>Homo heidelbergensis: What's in a name or rather, who actually belongs?</b>	CC Room 24	2:30 p.m.-6 p.m.	23	Poster
<b><u>Human Biology Association</u></b>				
Human Biology Association Awards Luncheon	Hilton Hope AB	noon-1:15 p.m.		
Human Biology Association Podium Presentations	Hilton Superior A	1:30 p.m.-4:30 p.m.		
Human Biology Association Business Meeting	Hilton Superior A	5 p.m.-6:30 p.m.		
<b>Thursday, Evening</b>				
<b><u>American Association of Physical Anthropologists</u></b>				
AAPA COD International Mixer	Hilton Center Street B	5 p.m.-7 p.m.		
Live Auction	CC Ballroom A	7 p.m.-8:30 p.m.		
Journal of Human Evolution Editorial Board Meeting	Hilton Hope C	7:30 p.m.-10 p.m.		

*American Association of Anthropological Genetics*

American Association of Anthropological Genetics Business Meeting	Hilton Center Street D	7:30 p.m.-8:30 p.m.
American Association of Anthropological Genetics Cocktail Hour	Hilton Hope AB	8:30 p.m.-9:30 p.m.

*Human Biology Association*

Human Biology Association Business Meeting	Hilton Superior A	5 p.m.-6:30 p.m.
Human Biology Association Student Reception	Hilton Center Street C	7 p.m.-9 p.m.

*Other*

BAWMN Mentoring Happy Hour	Hilton Center Street A	6 p.m.-8 p.m.
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**Friday, All day**

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*American Association of Physical Anthropologists*

AAPA Registration	CC Ballroom Foyer	7 a.m.-5 p.m.		
Family Respite Room	CC Room 15	7 a.m.-7 p.m.		
Speaker Ready/Press Room	CC Room 19	7:30 a.m.-5 p.m.		
Camp AAPA - An Adventure for Kids	Hilton Veterans A	7:30 a.m.-5 p.m.		
Exhibits	CC Ballroom BC	9:30 a.m.-6:30 p.m.		
<b>Dental Anthropology: Variation, Disease and Diet</b>	CC Ballroom BC	8 a.m.-6:30 p.m.	24	Poster
<b>Human Biology</b>	CC Ballroom BC	10 a.m.-6:30 p.m.	25	Poster

<b>Primate Reproductive Ecology</b>	CC Ballroom BC	10 a.m.- 6:30 p.m.	26	Poster
<b>Human Skeletal Biology: Variation and Variability</b>	CC Ballroom BC	10 a.m.- 6:30 p.m.	27	Poster
<b>Non-human Primate Evolution</b>	CC Ballroom BC	10 a.m.- 6 p.m.	28	Poster
<b>Functional Morphology, Biomechanics and Evolutionary Anatomy</b>	CC Ballroom BC	10 a.m.- 6:30 p.m.	29	Poster
<b>Forensic Anthropology</b>	CC Ballroom BC	10 a.m.- 6:30 p.m.	30	Poster

### **Friday, Morning**

#### **American Association of Physical Anthropologists**

AAPA COD WIN Committee Meeting	Hilton Center Street A	7:30 a.m.-9 a.m.		
AAPA COD Steering Committee Meeting	Hilton Center Street A	7:30 a.m.-9 a.m.		
Choosing, Evaluating, and Using Online Resources in Your Classes	CC Room 20	8 a.m.- 10 a.m.		
Citing Marginalized Scholars in Biological Anthropology	CC Room 20	10 a.m.- noon		
<b>Evolutionary perspectives on the primate aging process</b>	CC Ballroom A	8 a.m.- noon	31	Podium
<b>Energetics, Locomotion, and Nutrition</b>	CC Room 25	2:30 a.m.- 5:30 a.m.	32	Podium
<b>Hominin Fossils and Evolution</b>	CC Room 25	8 a.m.- noon	33	Podium
<b>Bioarchaeology: Disease, Diet, and Violence</b>	CC Room 26 AB	8 a.m.- noon	34	Podium
<b>Primate Conservation</b>	CC Room 26 C	8 a.m.- noon	35	Podium
<b>Bioarchaeology of Urbanization: The Biological, Demographic, and Social Consequences of Population Increase and Agglomeration</b>	CC Room 22	8 a.m.- noon	36	Poster



<b>Evidence and methods surrounding the use of entheses to reconstruct muscle anatomy and activity</b>	CC Room 23	8 a.m.-noon	37	Poster
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<b>Global leadership in dental anthropological research: A symposium in honor of G. Richard Scott</b>	CC Room 24	8 a.m.-noon	38	Poster
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**Other**

Evolutionary Anthropology Editorial Board Meeting	Hilton Center Street B	7:30 a.m.-9 a.m.		
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**Friday, Afternoon**

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**American Association of Physical Anthropologists**

AAPA COD IDEAS Alum Luncheon Meeting	Hilton Center Street B	noon-1 p.m.		
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Career Development Panel: How to Write a Grant Proposal	CC Room 20	12:15 p.m.-2:15 p.m.		
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		12:15 p.m.		
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AAPA Ethics Committee Meeting	Hilton Center Street A	2:30 p.m.-4:30 p.m.		
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Understanding the NSF Broader Impacts Criterion and Developing the Societal Impact of Your Science	CC Room 20	2:30 p.m.-4:30 p.m.		
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Education Committee Meeting	Hilton Center Street A	5 p.m.-6 p.m.		
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<b>The Evolution of Syphilis: A New Approach (Joint PPA-AAPA Symposium)</b>	CC Ballroom A	5 p.m.-7 p.m.	39	Podium
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<b>Primate Behavior and Ecology</b>	CC Room 25	2:30 p.m.-6 p.m.	40	Podium
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<b>Primate Postcranial Functional Morphology</b>	CC Room 26 AB	2:30 p.m.-5:30 p.m.	41	Podium
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<b>Primate Reproduction</b>	CC Room 26 C	2:30 p.m.-5:30 p.m.	42	Podium
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<b>Advancing the field: Movement ecology in the nonhuman primates</b>	CC Room 22	2:30 p.m.-5:30 p.m.	43	Poster
<b>From Pedestrian to Cerebral in the Pleistocene: A Symposium in Honor of Erik Trinkaus</b>	CC Room 23	2:30 p.m.-5:30 p.m.	44	Poster
<b>Biological Anthropology of Brazilian populations – past and present</b>	CC Room 24	2:30 p.m.-5:30 p.m.	45	Poster

**Dental Anthropology Association**

Dental Anthropology Association Speed Networking	Barley House Cleveland (1261 W 6th St)	4:15 p.m.-5 p.m.		
Dental Anthropology Association Happy Hour	Barley House Cleveland (1261 W 6th St)	5 p.m.-6:30 p.m.		

**Friday, Evening**

**American Association of Physical Anthropologists**

Education Committee Meeting	Hilton Center Street A	5 p.m.-6 p.m.		
AAPA Business Meeting and Awards Presentation	CC Ballroom A	6:30 p.m.-8:30 p.m.		

**Dental Anthropology Association**

Dental Anthropology Association Happy Hour	Barley House Cleveland (1261 W 6th St)	5 p.m.-6:30 p.m.		
Dental Anthropology Business Meeting	CC Ballroom A	8:30 p.m.-9:30 p.m.		

**Saturday, All day**

**American Association of Physical Anthropologists**

AAPA Registration	CC Ballroom Foyer	7 a.m.-3 p.m.		
Family Respite Room	CC Room 15	7 a.m.-7 p.m.		

Camp AAPA - An Adventure for Kids	Hilton Veterans A	7:30 a.m.-5 p.m.		
Exhibits	CC Ballroom BC	9:30 a.m.- 6:30 p.m.		
<b>Genetics</b>	CC Ballroom BC	10 a.m.- 7 p.m.	46	Poster
<b>Education in Biological Anthropology</b>	CC Ballroom BC	10 a.m.- 7 p.m.	47	Poster
<b>Primate Craniodental Anatomy</b>	CC Ballroom BC	10 a.m.- 7 p.m.	48	Poster
<b>Primate Ecology, Conservation and Genetics</b>	CC Ballroom BC	10 a.m.- 7 p.m.	49	Poster
<b>Hominin Evolution</b>	CC Ballroom BC	10 a.m.- 7 p.m.	50	Poster
<b>Paleopathology</b>	CC Ballroom BC	10 a.m.- 6 p.m.	51	Poster
<b>Skeletal Biology: Growth and Development</b>	CC Ballroom BC	10 a.m.- 7 p.m.	52	Poster
<b>Skeletal Biology: Human Variation</b>	CC Ballroom BC	10 a.m.- 7 p.m.	53	Poster

### Saturday, Morning

#### *American Association of Physical Anthropologists*

AAPA COD Steering Committee Breakfast	Hilton Center Street A	7:30 a.m.-9 a.m.		
AAPA COD International Scholars Committee Meeting	Hilton Center Street A	9 a.m.- 10 a.m.		
The Evolution of the Human Form, with notes on the reconstruction of ancient ancestors (AAAG-AAPA-AAA-HBA session)	CC Room 20	10 a.m.- noon		
<b>Interpreting and communicating genetic variation in 2019: a conversation on race</b>	CC Ballroom A	8 a.m.- noon	54	Podium
<b>Bioarchaeology and Forensic Anthropology: Shared Applications</b>	CC Room 26 C	8 a.m.- noon	55	Podium
<b>Primate Diets and Foraging Behavior</b>	CC Room 25	8 a.m.- noon	56	Podium
<b>Diet, Ecology and Behavior in Human Evolution</b>	CC Room 26 C	8 a.m.- noon	57	Podium

<b>Minimally Invasive Biomarkers in Human Population Biology Research: State of the Science and Future Directions</b>	CC Room 22	8 a.m.-noon	58	Poster
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**Saturday, Afternoon**

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***American Association of Physical Anthropologists***

AAPA Presidential Panel Discussion: Genetics and Race	CC Ballroom A	12:30 p.m.-12:15 p.m.		
Mentoring for teaching-focused careers	CC Room 20	2:30 p.m.-4:30 p.m.		
AAPA Student Awards Committee Meeting	Hilton Center Street A	5 p.m.-6 p.m.		
<b>Epigenetics: Bridging cultural and biological anthropology</b>	CC Ballroom A	2:30 p.m.-6:15 p.m.	59	Podium
<b>Life History and Behavior Ecology</b>	CC Room 26 AB	2:30 p.m.-6 p.m.	60	Podium
<b>Population History</b>	CC Room 26 AB	2:30 p.m.-6 p.m.	61	Podium
<b>A life of science: A symposium dedicated to C. Owen Lovejoy in recognition of his many scientific contributions</b>	CC Room 22	2:30 p.m.-6 p.m.	62	Poster

**Saturday, Evening**

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***American Association of Physical Anthropologists***

AAPA Student Awards Committee Meeting	Hilton Center Street A	5 p.m.-6 p.m.		
AAPA Student Awards and Closing Reception	Hilton Hope DE	7 p.m.-9:30 p.m.		

**Thursday, All day sessions.**

Session Primate Behavior

1:

*Contributed Poster Presentations.* Chair: Leila Porter.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

- 1 **Orangutan Nesting Behavior in Gunung Palung National Park, West Kalimantan, Indonesia.** L.A. BRUBAKER-WITTMAN, A. BLACKBURN, A.L. DIGIORGIO, F.S. HARWELL, E.E. KANE, T. SUSANTO, C.D. KNOTT.
- 2 **Habituation Update on Assirik Chimpanzees at Niokolo-Koba National Park, Senegal.** S. LINDSHIELD, P. NDIAYE, M. GUEYE, S.L. BOGART.
- 3 **Captive chimpanzees (*Pan troglodytes*) demonstrate contagion in spontaneous scratching behavior.** E.A. CARTMILL, D.M. FESSLER, B.N. FLORKIEWICZ, A. GANE, K. RYAN.
- 4 **Socio-communicative behaviors of West African chimpanzees (*Pan troglodytes verus*) in a savanna habitat at Fongoli, Senegal.** A. RABINOWITZ, J.D. PRUETZ, A. BRONIKOWSKI.
- 5 **Revisiting the savanna chimpanzee (*Pan troglodytes*) as a referential model for hominin origins: Issa, Tanzania as a case study.** L.F. MARCHANT, A.K. PIEL, F.A. STEWART.
- 6 **Species distribution models at different scales: Predicting the chimpanzee geographical distribution at continental and country levels.** B.J. SCHIERY, S.M. LINDSHIELD, P. NDIAYE, J. PRUETZ, S. BOGART, E.R. OTAROLA-CASTILLO.
- 7 **Intraspecific variation in ebony langurs: the importance of long-term data and broad geographic coverage.** V. NIJMAN.
- 8 **The ontogeny of infant aye-aye (*Daubentonia madagascariensis*) vocalizations.** L.M. PACIULLI, D.Q. WATTS, A.P. PANNICK, A.P. MILLER.
- 9 **Reappearance Diversity: Quantifying Musicality in Primate Vocalizations.** D. SCHRUTH, C. TEMPLETON, D. HOLMAN.
- 10 **Behavioral markers of stress in separated captive female and male ring-tailed lemurs (*Lemur catta*).** C.M. CROMER, L.M. PACIULLI, J.L. VERDOLIN.
- 11 **Climatic variables are strong predictors of allonursing and communal nesting.** A. LOUPPOVA, J.M. KAMILAR, A.L. BADEN.
- 12 **Determining dominance rank order in wild female white-faced capuchins: a comparison of three methods.** G.L. KING-BAILEY, K.M. JACK.
- 13 **The role of social interaction and nearest neighbor preferences in juvenile *Alouatta palliata* social development.** E.M. COGGESHALL, A.L. SCHREIER, C. MERRIGAN-JOHNSON, L.M. BOLT.
- 14 **Differences in grooming behaviors in mantled howler monkeys (*Alouatta palliata*) based on weather conditions.** H.N. HICKS.
- 15 **Temperature alters chest redness in male geladas.** P.M. DELACEY, T.J. BERGMAN, J.C. BEEHNER.

- 16 **The Phylogeny of Baboon Social Organization.** A.J. FUCHS, J.M. KAMILAR.
- 17 **Male-Female Friendships in Kinda Baboons.** A.H. WEYHER, J.M. KAMILAR.
- 18 **Comparison of Play Frequency in Four Sympatric Monkey Species in Kibale National Park, Uganda.** S.G. LUCCI, J.M. ROTHMAN.
- 19 **Do polyspecific associations influence nutritional intake of female redbtail monkeys (*Cercopithecus ascanius*)?** M.A. BRYER, J.M. ROTHMAN.
- 20 **Risk of injury in two Asian colobines.** A. KOENIG, J.A. FEDER, A. LU, C. BORRIES.
- 21 **Problem-solving with regard to age in Barbary macaques.** E. RATHKE, J. FISCHER.
- 22 **Consistent sex differences in stone play and stone tool use in free-ranging Balinese long-tailed macaques.** C. CENNI, C. WRIGHT, N. GUNST, I. WANDIA, J. LECA.
- 23 **When is object manipulation an expression of psychological disturbance caused by environmental stressors? A macaque-human comparison.** S. CHERTOFF, K. HARKNESS, I. WANDIA, A. FOROUD, J. LECA.
- 24 **Dynamic social networks in the wake of environmental disaster: Hurricane Maria and the Cayo Santiago macaques.** S.M. LARSON, C.H. KAPLINSKY, A. RUIZ-LAMBIDES, M. MONTAGUE, N. SNYDER-MACKLER, M.L. PLATT, L.J. BRENT.
- 25 **Assessing the impact of duration versus bout frequency data in studying infant handling.** A.G. KING, T.C. RISSLING, P. SICOTTE.
- 26 **Exploring sources of variation in inter-observer reliability scoring of facial expressions using the ChimpFACS.** A.K. MOLINA, B.N. FLORKIEWICZ, E.A. CARTMILL.

Session Primate Diet and Foraging Behavior

2:

*Contributed Poster Presentations.* Chair: Mitchell Irwin.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

1 **Resource preference of a female aye-aye (*Daubentonia madagascariensis*) in Torotorofotsy, Madagascar.** T.M. SEFCZEK, D.R. RANDIMBIHARINIRINA, O. RANDRIANARISON, E.E. LOUIS.

2 **Variation in diet and foraging effort across seasons in the frugivorous Brown Lemur (*Eulemur fulvus*): Contrasts with a sympatric folivore (*Propithecus diadema*).** M.T. IRWIN, V. RAHALINARIVO, J. RAHARISON, B. RAMORASATA, J. RANAIVOARISOA, J. RANDRIANASY, J.M. ROTHMAN.

- 3 **Sodium content in plant & insect food resources consumed by chimpanzees in Gombe National Park, Tanzania.** A. KAMANZI SHIMWA, C.M. MURRAY, M.L. POWER, R.C. O'MALLEY.
- 4 **Detecting shifts in the trophic niches of sympatric Verreaux's sifaka (*Propithecus verreauxi*) and ring-tailed lemurs (*Lemur catta*) using stable isotope analyses.** N.W. SAWYER, J.E. LOUDON, R. SCHACHT, M.L. SAUTHER, M. SPONHEIMER.
- 5 **Fur regrowth varies among and within individual cheirogaleid lemurs.** B.E. CROWLEY, E.E. EHMKE.
- 6 **Dietary fiber and nutritional quality of the foods of Bornean orangutans (*Pongo pygmaeus wurmbii*) in Gunung Palung National Park, West Kalimantan, Indonesia.** I. CHOWDHURY, M.E. EORI, T.W. SUSANTO, E.E. KANE, N. CONKLIN, C.D. KNOTT.
- 7 **Stable isotope analysis reveals nutritional impacts of anthropogenic food sources in a group of dumpster-feeding Barbary macaques (*Macaca sylvanus*).** S.T. SAIYED, N.E. TOROCZKAI, M.R. SCHURR, L.T. GETTLER, A. FUENTES.
- 8 **Investigating interannual and seasonal variation in sifaka diet in Tsingjoarivo, Madagascar.** E. THURAU, S. RASOLONJATOVO, F. RAHARISON, M. IRWIN.
- 9 **To cook or not to cook: shellfish feeding in tufted capuchins.** M.D. FOGACA, M.F. LAIRD, B.W. WRIGHT, R. SALMI, R.R. SANTOS.
- 10 **Age-related variation in ingestive behavior patterns in *Sapajus* spp.** J. CHALK-WILAYTO, M.F. LAIRD, K.A. WRIGHT, A.O. RIVERA, B.W. WRIGHT, P. IZAR, D. FRAGASZY, C.F. ROSS, D.S. STRAIT, A. VAN CASTEREN, E. VISALBERGHI, R.S. SCOTT, M.D. FOGAÇA.
- 11 **Oral processing behaviors of captive mandrills (*Mandrillus sphinx*) at the Columbus Zoo.** J. GEHERTY, S.W. MCGRAW.
- 12 **Gut microbial composition differs based on reproductive state in wild Phayre's leaf monkeys.** A. LU, E. MALLOTT, K. AMATO.
- 13 **Gut microbiota in the full gastrointestinal tract of a ring-tailed lemur (*Lemur catta*).** Y. ZENG, X. NI, D. ZENG, L. NIU, J. DENG, Y. LI, Y. ZHOU.
- 14 **Implementing Nutritional Geometry to identify dietary constraints and strategies in the red-bellied lemur (*Eulemur rubriventer*).** A. DU BOUR, J. RAHARISON, B. RAMORASATA, J. ROTHMAN, M.T. IRWIN.
- 15 **Effects of mean annual precipitation and temperature on carbon and nitrogen isotopes in neighboring chimpanzee sites within Gombe and Ugalla National Parks.** I. HERMSMEYER, A. SOMERVILLE, J. MOORE, A. FROEHLE, M. SCHOENINGER.
- 16 **Differentiating between frugivory and folivory in primates using non-destructive XRF measurements of strontium/calcium ratios: A case study from Kibale National Park.** M.I. HAMILTON, B. DRAKE, S.V. NELSON.
- 17 **Nutritional balancing and composition varies with infant age in wild mother orangutans (*Pongo pygmaeus wurmbii*).** T.D. BRANSFORD, S. UTAMI ATMOKO, E.R. VOGEL.

- 18 **The benefits of negative energy balance? Oxidative stress and inflammation in wild Bornean orangutans (*Pongo pygmaeus wurmbii*).** E.R. VOGEL, D.J. NAUMENKO, T.D. BRANSFORD, S. UTAMI ATMOKO.
- 19 **The chemical signature of weaning: comparing the trace element concentration of captive lowland gorilla breast milk (*Gorilla gorilla*) and wild mountain gorilla (*Gorilla beringei beringei*) plant foods.** M.M. VAKIENER, W. ECKARDT, V. VECELLIO, T.S. STOINSKI, A. MUDAKIKWA, S.C. MCFARLIN, M.L. POWER.
- 20 **Arboreality and fruit-feeding in Bwindi mountain gorillas (*Gorilla beringei beringei*).** K.R. OSTROFSKY, M.M. ROBBINS.

Session Bone Biology

3:

*Contributed Poster Presentations.* Chair: Kristian Carlson.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

- 1 **Spatial autocorrelation of bone material stiffness and its implications for skeletal toughness.** A.J. RAPOFF, W.S. MCGRAW, D.J. DA EGLING.
- 2 **Population Variation in the Fusion Sequence of Primary and Secondary Ossification Centers in the Human Skeleton.** M. LENOVER, M. SESELJ.
- 3 **Uncertainties Regarding the Physical Basis of Lamellar Bone Periodicity in Secondary Osteons Suggest that Surrogates Based on Infilling/Periodicity Should be Considered.** J.G. SKEDROS, M.S. DOUTRÉ.
- 4 **Variation in the trabecular structure of the proximal tibia between obese and non-obese individuals.** D.S. GLEIBER, D.L. CUNNINGHAM, D.J. WESCOTT.
- 5 **Patterns in and determinants of cortical thickness and rigidity in the femoral diaphysis of Holocene *Homo sapiens*.** K.J. CARLSON, A.A. KOLAWA, K.A. TOMMY, M.R. DOWDESWELL, N.B. STEPHENS, L.J. DOERSHUK, J.P. SAERS, J.T. STOCK, T.M. RYAN, A.D. GORDON, T. JASHASHVILI.
- 6 **Trabecular patterning in the human skeleton: vertebral, humeral, femoral, and tibial variation.** N.B. STEPHENS, J.P. SAERS, L.J. DOERSHUK, T. JASHASHVILI, K.J. CARLSON, A.D. GORDON, J.T. STOCK, T.M. RYAN.
- 7 **Exploring *In Vivo* Linear Microcrack Prevalence By Sex and Age as a Variable of Skeletal Fragility.** V. DOMINGUEZ, A. AGNEW.
- 8 **Relationships between lower limb bone rigidity and whole-limb force and power production: Implications for estimating muscle performance in the past.** A.A. MACINTOSH, J.T. STOCK.
- 9 **Impact of subsistence, latitude, and terrain on lower limb bone robusticity in a globally distributed skeletal sample.** T. DORSHORST, B. HOLT.



- 10 **Correlations between low resolution pQCT and high resolution  $\mu$ CT scanning of trabecular bone: what are potential limits of inference from living people?** J.P. SAERS, L.J. DOERSHUK, N.B. STEPHENS, T. JASHASHVILI, K.J. CARLSON, A.D. GORDON, T.M. RYAN, J.T. STOCK.
- 11 **Population-specific trabecular variation patterns drive heterogeneity in modern human phenotypic covariance matrices of trabecular and cortical bone properties.** A.D. GORDON, K.J. CARLSON, L.J. DOERSHUK, T. JASHASHVILI, J.P. SAERS, N.B. STEPHENS, J.T. STOCK, T.M. RYAN.
- 12 **Patterns of variation in trabecular bone volume fraction in the calcaneus and C2 vertebrae of *H. sapiens*.** B.J. ADDISON, D.E. LIEBERMAN.
- 13 **Differential adaptation of cortical and trabecular bone to mechanical loading and its dependence on age.** B. MULDER, J.T. STOCK, S.A. INSKIP, C.C. CESSFORD, J.E. ROBB.
- 14 **Evaluating Osteon Cement-Line Interface Distances for Advancing Understanding of Bone Adaptation.** E.D. FINLINSON, B.W. KING, M.K. HENRIE, Z.M. LOHSE, J.G. SKEDROS.

Session Primate Postcranial Morphology and Locomotion  
4:

*Contributed Poster Presentations.* Chair: Susan Lad.

**CC Ballroom BC.**

8:00 **Poster setup.**

1:30 **Even numbered presenters stand by their posters.**

5:30 **Odd numbered presenters stand by their posters.**

- 1 **Interspecific variation of calcaneal morphology in gorillas.** C.M. HARPER, C.B. RUFF, A.D. SYLVESTER.
- 2 **Geometric morphometric analyses of carpals and tarsals demonstrate differences in wild and captive baboon populations.** M.M. DUDAS.
- 3 **Ontogeny of intrinsic digit proportions in non-grasping mammals: a test of the grasping theory of primate hand and foot growth.** A. HYDE, R.Z. GERMAN, J.W. YOUNG.
- 4 **Assessing the influence of Hox11 genes on calcaneal trabecular bone formation.** K.M. KJOSNESS, T.M. RYAN, P.L. RENO.
- 5 **Functional morphology of chevron bones in mammals.** A.M. ZAVODSZKY, G.A. RUSSO.
- 6 **Trabecular ontogeny of African ape third metacarpals.** K.P. DECKERS, C.J. DUNMORE, M.M. SKINNER, T.L. KIVELL.
- 7 ***Ateles* species differences in limb bone properties, body length, and sexual dimorphism.** J. RUNESTAD CONNOUR, S.L. CANINGTON, K. NIDA.
- 8 **The Evolution and Morphological Diversification of the Subtribe Papionina.** S.B. LABELLE, M. SINGLETON, J.M. CHEVERUD.

- 9 **Post-cranial diversity in Catarrhines.** B.A. KENYON, N. VON CRAMON-TAUBADEL.
- 10 **Anatomical convergences in adult Gorilla and Pongo males.** A.L. ZIHLMAN, C.E. UNDERWOOD.
- 11 **Scapula shape and altitude in eastern gorillas (*Gorilla beringei*).** M. SZAFRANIEC, R.S. JABBOUR.
- 12 **The blood must flow: vertebral artery size relative to transverse foramen size in the tarsier cervical spine.** T.K. NALLEY, P. AMIN, N. GRIDER-POTTER, F. MCGECHIE, J.M. ORGAN.
- 13 **Skeletal-wide variation in phylogenetic signal across *Order Primates*.** G.M. AGOSTINI, J.M. KAMILAR.
- 14 **The effects of morphometric protocol on morphological integration statistics: a case study in scapulae.** M.A. CONAWAY, H. JUNG, N. VON CRAMON-TAUBADEL.
- 15 **The impact of locomotor function and phylogeny on biomechanical neck length of the femur.** T.R. REIN.
- 16 **A 3D analysis of sacroiliac joint surface topography among primates.** P. MIYAN, S.T. MINCER, G.A. RUSSO.
- 17 **Sacral vertebral count and locomotor behavior of extant primates: An evaluation of selective constraint that locomotion exerts on sacral vertebral formula.** A.L. PETERSON.
- 18 **Using Novel 3D Techniques to Visualize and Quantify Primate Neck Anatomy.** F. MCGECHIE, S. SULLIVAN, K.M. MIDDLETON, C.M. HOLLIDAY, T.K. NALLEY, N. GRIDER-POTTER, C.V. WARD.
- 19 **Morphological integration in thoracolumbar vertebrae of *Macaca fascicularis*.** H. JUNG, N. VON CRAMON-TAUBADEL.
- 20 **Head and neck range of motion and its relation to cervical vertebral morphology in primates.** N. GRIDER-POTTER, T.K. NALLEY, N.E. THOMPSON, R. GOTO, Y. NAKANO.
- 21 **Effect of infant carriage on joint yield in wild vervet monkeys.** D. GIBBONS, B.A. PATEL, P.S. HENZI, C. YOUNG, L. BARRETT, J. JARRETT, N.E. THOMPSON.
- 22 **Assessing the determinants of primate gait kinematics in an ecological and phylogenetic framework, Part I: Phylogenetic methods for biomechanics.** T.L. HIERONYMUS, L.J. SHAPIRO, N.T. DUNHAM, A. MCNAMARA, J.W. YOUNG.
- 23 **Assessing the determinants of primate gait kinematics in an ecological and phylogenetic framework, Part II: Platyrrhine quadrupedalism.** L.J. SHAPIRO, T.L. HIERONYMOUS, N.T. DUNHAM, A. MCNAMARA, J.W. YOUNG.
- 24 **Plantar pressure distribution in *Gorilla*.** R.E. WUNDERLICH, A. ZEININGER, D. SCHMITT.
- 25 **Work minimization and toppling concerns predict limb phasing in wild primates.** M.C. GRANATOSKY, C.F. ROSS, M.F. LAIRD, A. VAN CASTEREN, J.

CHALK-WILAYTO, M. DUTRA FOGAÇA, J.A. LEDOGAR, D.S. STRAIT, B.W. WRIGHT, J.R. USHERWOOD.

- 26 **Muscle synergy based-locomotor control in bipedal and quadrupedal walking: *Macaca fuscata* and *Pan troglodytes*.** R. GOTO, T. SHITARA, S. LARSON, Y. NAKANO.
- 27 **Forelimb and hindlimb peak forces in *Gorilla*.** D. SCHMITT, R.E. WUNDERLICH, A. ZEININGER.
- 28 **Impact forces and hindlimb vertical impulses in *Gorilla*.** A. ZEININGER, D. SCHMITT, R.E. WUNDERLICH.
- 29 **Wild platyrrhine quadrupedal kinematics on multiple and inconsistent substrates.** A. MCNAMARA, N.T. DUNHAM, J.W. YOUNG, L.J. SHAPIRO.
- 30 **Arboreal primate gait kinematics: Do wild data validate laboratory inferences?** N.T. DUNHAM, A. MCNAMARA, B. DEMES, L.E. JOHNSON, L. SHAPIRO, J.W. YOUNG.
- 31 **Shoulder morphology and substrate use in extant cercopithecoid monkeys.** M. VERGAMINI, L.M. DAY, E. GAGARIN, H. FURCHAK, A.L. RECTOR.
- 32 **Arm-swinging and habitat use of the red-shanked douc in the Son Tra Nature Reserve, Vietnam.** K.E. BAILEY, J.W. WINKING, D.L. CARLSON, . TRAN VAN BANG, . HA THANG LONG.
- 33 **Mechanical stimulus vs. selection in determining entheses morphology in mice.** A.A. RUTH, K.M. MIDDLETON.
- 35 ***Gorilla* hindlimb muscle fiber phenotypes.** D.J. DOYLE, M. HOLMES, D. SCHMITT, A. ZEININGER, C.E. WALL.
- 36 **Musculotendinous changes associated with hindlimb bone elongation in the Longshanks mouse.** M.M. BRADLEY, S. MOORE, C. ROLIAN.
- 37 **Examining fluctuating asymmetry in *Macaca fascicularis*.** A.N. ROMERO, C.A. KIRCHHOFF, S.B. COOKE, C.E. TERHUNE.
- 38 **Phylogeny of Extant Colobines Using Morphological Data.** A. FERNANDEZ, S.R. FROST.
- 39 **Sexual dimorphism in absolute and relative enthesal length in *Colobus guereza* and *Hylobates lar*.** A.R. OTERO.

Session Hominin Environments, Diet, and Behavior  
5:

*Contributed Poster Presentations.* Chair: Thomas Kaiser.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

- 1 **The localized environment of early *Homo erectus* at East Turkana, northern Kenya.** C.M. SMITH, M.D. BIERNAT, D.B. PATTERSON, A.S. HAMMOND.

- 2 **Landscape Survey of Potential Combustion Features at FxJj20 Site Complex in Koobi Fora, Kenya.** C.K. MILLER, R. CUTTS, D. BRAUN, J. HARRIS.
- 3 **A preliminary study of Pleistocene bovid mortality profiles in East Turkana, Kenya.** K.N. GURIAN, E. CORDINER, A.S. HAMMOND, F.L. FORREST.
- 4 **The paleontological record of the *Australopithecus anamensis* site of Allia Bay, East Turkana.** L. DUMOUCHEL.
- 5 **Life history underpinnings of East Turkana faunal turnover during the early Pleistocene.** J. FRAZIER, A. MCGROSKY.
- 6 **Bovid Tribe Abundance as an Indicator of Spatial and Temporal Heterogeneity in the Omo-Turkana Basin from 2.0-1.38 Ma.** A. HANSON, M.D. BIERNAT, K. O'BRIEN, A. ENNY, J. PORTER, D.R. BRAUN, W. BARR.
- 7 **Mid-Pliocene paleoenvironment of Woranso-Mille (Ethiopia): implications for hominin diversity and *Australopithecus* paleoecology.** D.F. SU, Y. HAILE-SELASSIE.
- 8 **Bovid paleocommunities and *Australopithecus* environments in the lower Awash Valley, Ethiopia, from ~ 3.8-2.95 Ma.** C.M. SEYOUM, J. ROWAN, K.E. REED, W.H. KIMBEL.
- 9 **Paleoenvironmental context of early *Homo sapiens* from the Kibish Formation, southern Ethiopia: evidence from bovid ecomorphology and abundance.** Y.G. TSIGE, J. ROWAN, S. YIRGA, J.G. FLEAGLE.
- 10 **Large mammal community structure and habitat variation in southern African *Paranthropus* and *Australopithecus*.** K.D. O'NEILL, A.L. RECTOR.
- 11 **Biogeography and paleoenvironments of *Paranthropus* and early *Homo*.** A.L. RECTOR.
- 12 **Ecological context of the South African Middle Stone Age from Sibudu, KwaZulu-Natal.** J.R. ROBINSON.
- 13 **Woody cover in modern African ecosystems: Implications for hominin landscape dynamics.** E.W. NEGASH, J. WYNN, R. BOBE.
- 14 **Frequency of enamel chipping in Tai Forest cercopithecids: Implications for dietary reconstruction in paleoanthropological contexts.** L.D. FANNIN, D. GUATELLI-STEINBERG, E. GEISLER, P. CONSTANTINO, W.S. MCGRAW.
- 15 **Comparing intratooth isotope profiles of modern warthogs and fossil suids: a potential proxy for hydroclimate seasonality of hominin fossil sites.** D. YANG, K.T. UNO, T.E. CERLING.
- 16 **Primate Communities and Atmospheric CO<sub>2</sub> in the Plio-Pleistocene of east Africa.** M.D. BIERNAT, K.E. REED.
- 17 **Bite Force Analysis of the Human Mandible: Assessing Jaw Capabilities of Human Ancestors.** H.J. MOSES, B.J. WELKER.
- 18 **An experimental study of human hand pressures during suspension and implications for fossil hominin locomotion.** V.A. LOCKWOOD, S. LU, S. WINTER, T.L. KIVELL.

- 19 **An experimental investigation of asymmetrical Paleolithic wooden spear tips: expediency or design?** R. BIERMANN GÜRBÜZ, S.J. LYCETT.
- 20 **An experimental study of bone tools from Swartkrans Cave, South Africa.** S. GARDNER, F. L'ENGLE WILLIAMS, J. HEATON, T. PICKERING.

Session Bioarchaeology: Methods and Techniques

6:

*Contributed Poster Presentations.* Chair: Eng, Jacqeline.

**CC Ballroom BC.**

8:00 **Poster Setup.**

1:30 **Even numbered presenters standby posters.**

6:00 **Odd number poster presenters stand by their posters.**

- 1 **Ancient DNA study of M21 Excavated from Lingkou site, Lintong, Shaan Xi Province.** Y. GUO, D. CAI, N. ZHANG, S. ZHU, C. LI, X. SHAO, Y. WANG, Q. LIANG.
- 2 **Molecular Archaeological Research on Human Remains from the Khulhiin am and Khundiin khooloi Sites in Mongolia during the Mongol-Yuan period.** N. ZHANG, D. CAI, Y. GUO, X. SHAO, S. ZHU, Y. WANG, Q. LIANG, C. LI.
- 3 **Mitochondrial DNA Analysis of M21 Xiongnu Tomb in Hulaha Valley of Mongolia.** X. SHAO, N. ZHANG, Y. GUO.
- 4 **Enamel proteome sequences from Dmanisi (Georgia) enable molecular phylogeny beyond the limits of ancient DNA preservation.** E. CAPPELLINI, F. WELKER, J.V. OLSEN, D. LORDKIPANIDZE, E. WILLERSLEV.
- 5 **Ancient proteomics analysis in the early contact period, St. Catherines Island, Georgia.** F. CRESPO, T. CUMMINS, M. MERCHANT, J. KLEIN, L. SPRINGS, D.A. BOLNICK, C.S. LARSEN, D.H. THOMAS.
- 7 **Geospatial distributions of trace metals found in 17<sup>th</sup> and 18<sup>th</sup> Century New York African Burial Ground grave soil samples using XRF technology.** C. CLINTON, C. DUNCAN, H. JACKSON, F. JACKSON.
- 8 **Identifying and Interpreting Unexpected Spatial Patterns of Bioarchaeological Data Using Geographic Information Systems.** M.C. STEWART, G. VERCELLOTTI.
- 9 **Methods for the excavation of unmarked burials located beneath an historic structure.** B.S. MCCLAIN, J. HAEFNER.
- 10 **Developing a Rapid Technique for Identifying Human Bone in Bioarchaeological and Forensic Contexts: ZooMS and the Battle of Towton.** N. NEFF, M. COLLINS, T. SUTHERLAND.
- 11 **Synchrotron radiation holographic nanotomography of ancient human hair: Exploring number, distribution and shape of melanin granules, and their implications as to hair colour.** K.O. LORENTZ, J.C. DA SILVA, C. CHRYSOSTOMOU, Y. MIYAUCHI, S. LEMMERS, M.R. ZARURI, F. FORUZANFAR, M. SAJJADI.

- 12 **Analysis of cortisol levels from archaeological hair from the medieval nubian population of kulubnarti.** G.B. BOWLAND, D. VAN GERVEN, R.M. BERNSTEIN.
- 13 **An Analysis of Modified and Processed Human Bone Artifacts from Late Prehistoric (AD 700 – 1500) Southern Texas.** M.S. TAYLOR.
- 14 **The Physical and the Digital: a test of the reliability of craniometric data collection from 3D models.** L. NOLDNER.
- 15 **Preliminary Investigation of Aging Effects on Cross-Sectional Geometric Properties of Adult Ribs in a Medieval Polish and Modern Skeletal Sample.** R.C. MAYUS, A.M. AGNEW.
- 16 **Feasibility of volumetric bone mineral density (vBMD) to predict rib structural properties.** R.L. HUNTER, Y. KANG, K.C. BRILEY, A.M. AGNEW.
- 17 **Analysis of 3D Reconstruction Methods in Computed Tomography Research.** A.A. TORRES, J. BROWN, S.R. WILLIAMS.
- 18 **Osteometric sorting of metacarpals and metatarsals in commingled human skeletal assemblages.** K.A. BROEHL.
- 19 **Effects of microbial colonization on bone collagen stable carbon and nitrogen isotope values: Results from a long-term diagenesis modelling experiment.** S. GARVIE-LOK, J. MORGAN, P. MAYNE CORREIA, M. PITRE.
- 20 **Estimating the minimum number of individuals (MNI) from a looted, commingled context in Hualcayán, Peru.** E.A. BRIGGS, K.C. JORGENSEN, R.E. BRIA, E.A. SHARP.
- 21 **Incorporating Histological Methods to Examine the Response to Famine in Mid-19<sup>th</sup>-Century Ireland.** L.A. MECKEL, H.R. BUCKLEY, J. GEBER.
- 22 **Using cranial morphology to investigate population history in the genomic age: insights from the study of a 9500-year-old human skeleton from San Miguel Island, California.** S.C. KUZMINSKY.

Session Paleodemography

7:

*Contributed Poster Presentations.* Chair: Lieveise, Angela.

**CC Ballroom BC.**

8:00 **Poster setup.**

1:30 **Even numbered presenters standby their poster.**

6:00 **Odd numbered presenters stand by their posters.**

- 1 **Infanticide or expected child mortality? The curious abundance of babies in the Iron Age necropolis of Kopila hillfort, Korčula, Croatia.** L.L. DERN, D. RADOVČIĆ, E.R. ORLIKOFF, M.M. GLANTZ.
- 2 **Survivorship from historical death records and skeletal remains from the Oakwood Cemetery in Austin, Texas (1866-1914).** M.H. NGUYEN, C.A. WOLFE, M.D. HAMILTON, N.P. HERRMANN.

- 3 **Weighing the possibilities: Exploring a modified technique for the assessment of frailty in human skeletal remains.** K. GADDIS, M. RAMSIER, A. KOPERKIEWICZ, M. POLCYN, A. GRUENTHAL-RANKIN.
- 4 **Frail young, Enduring Adults: Paleopathology of a Bronze Age Chinese Skeletal Sample.** E. JOHNSON, R. MAO, H. WANG, E. BERGER, J. DITTMAR, I. YUAN.
- 5 **Oral and Sinus Infection Among Okhotsk Marine Foragers: Implications for Differential Frailty.** A.R. LIEVERSE, H. ISHIDA, D. KUBO, M. YONEDA.
- 6 **Late Copper Age multiple inhumation burials with subadults in the Carpathian Basin.** A.N. KARABOWICZ.
- 7 **Mortality or Methods: What Do Skeletal Age Estimates Really Tell Us About Past Populations?** S.M. GETZ, G.R. MILNER.
- 8 **Ancestral determination of crania from the ancient Roman necropolis of Sanisera.** M.F. PARKER, B. VILA, F. CONTRERAS.
- 9 **Mortuary practices' archaeology seen under a multivariate perspective: case study of southern Brazilian shellmounds.** A.A. BORELLA, D.V. BERNARDO.

Session Bioarchaeology: Diet, Migration and Identity  
8:

*Contributed Poster Presentations.* Chair: Chris Stantis.

**CC Ballroom BC.**

8:00 **Poster Setup.**

1:30 **Even numbered presenters standby their poster.**

6:00 **Odd numbered presenters stand by their posters.**

- 1 **Spatial differences in Late Neolithic to Early Bronze Age hunter-fisher-gatherer diet in Lake Baikal's Little Sea micro-region, Siberia.** H.G. MCKENZIE, A.R. LIEVERSE, A.G. NOVIKOV, O.I. GORIUNOVA, A.L. WATERS-RIST.
- 2 **Isotopic Estimation of Diet and Water Sources at the Archaeological Site of Tumulaca la Chimba, Peru.** B.I. QUISPE VILCAHUAMAN, B. TURNER-LIVERMORE, N. SHARRATT, C. CHINO.
- 3 **Assessing Fish Consumption in the Ancient Greek World Using Sulphur Stable Isotope Ratios.** K. MARI, L. REITSEMA, K. REINBERGER, C. BATCHELDER, S. VASSALLO, B. KYLE.
- 4 **Functional adaptation of trabecular bone in the Human mandibular condyle in relation to diet.** E.J. BROWN, J.T. STOCK.
- 5 **Exploring Provincial Interactions in the Tiwanaku State (C.E. 500-1100) Using Paleodiet Reconstruction.** J. SANTILLAN GOODE, A.C. DAHLSTEDT, P. GOLDSTEIN, M. SCHOENINGER, K.J. KNUDSON.
- 6 **Intra-Population Dietary Variation at Himera.** A. SCHMITZ, L.J. REITSEMA, K.L. REINBERGER, S. VASSALLO, B. KYLE.
- 7 **Reconstructing Weaning and Childhood Diets at the 6<sup>th</sup>-5<sup>th</sup> C. BCE Skeletal Population of the Greek Colony of Himera.** A.S. GANCZ, L.J. REITSEMA, K.L. REINBERGER, S. VASSALLO, B. KYLE.

- 8 **Why Do We Farm? The Effect of Climate Change and Risk on the North American Foraging-Farming Transition.** M.G. TORQUATO, E.R. OTÁROLA-CASTILLO.
- 9 **Tracking early human migrations through the Americas.** S.R. RENNIE, S. GONZALEZ, J. JOHNSON.
- 10 **Social structure, postmarital residence, and mortuary practice at Hualcayán, Peru.** C.M. PINK, E.A. SHARP, R.E. BRIA.
- 11 **Should I stay or should I go? Assessing residential mobility in Bronze Age Switzerland through the isotopic evidence.** A. VARALLI, J. DESIDERI, M. DAVID-ELBIALI, G. GOUDE, M. HONEGGER, M. BESSE.
- 12 **Finding Biological Markers of Mobility in Late Prehistoric Portugal and Spain: A Stable and Radiogenic Isotope Approach.** A.J. WATERMAN, R.H. TYKOT, D.W. PEATE.
- 13 **Isotopic perspectives on the shep-herd relationship at two Hellenistic (ca. 323 – 31 BCE) settlements in Thessaly, Greece.** K.G. BISHOP, S. GARVIE-LOK, M. HAAGSMA, S. KARAPANOU.
- 14 **Preliminary results from a recently discovered Holocene burial site in Northern Laos, Tam Pa Ping.** T.E. DUNN, A.J. ZACHWIEJA, L.L. SHACKELFORD, N. HUONG, P. DURINGER, J. PONCHE, C. AICHHOLZEZ, Q. BOESCH, E. PATOLE-EDOUMBA, A. BACON, D. SIHANAM, P. SICHANTHONGTIP, T. SAYAVONGKHAMDY, F. DEMETER.
- 15 **Living in Dust and Smog: Identity, Inequality, and Mortality During England's Industrial Revolution.** S.A. MCGUIRE.
- 16 **Appropriately managing archiving and access to culturally sensitive but scientifically valuable digital imagery.** J.M. WINCHESTER, T.M. RYAN, J. WISOR, L. COPES, T.K. BRENNAN, M.J. WAGNER, D.M. BOYER.
- 17 **Bioarchaeology of non-binary genders: perspectives from the Adena tradition of the Ohio Valley region.** R. WAKEFIELD.
- 18 **Reinterment of the human remains excavated from the Erie County Poorhouse Cemetery: persons never to be forgotten again.** M.M. MAYBERRY, J.E. SIRIANNI, D. PERRELLI.
- 19 **Surveying Portugal residents' view on the creation and dissemination of three-dimensional replicas of human skeletal remains.** V. CAMPANACHO, F. ALVES CARDOSO.
- 20 **Embodied Cultural Identity in Late Bronze Age Central Greece.** K.E. STILES.
- 21 **Public health policies, inequality, and industrialization in 20<sup>th</sup> century Cleveland health outcomes: a study from the Hamann-Todd Osteological Collection.** S.A. MATHENA-ALLEN.
- 22 **Reconstructing Mobility and Workload in Gule Populations from the Georgia Coast.** C. RUSSELL, C.B. RUFF, C. LARSEN.

**Thursday, Morning sessions.**



Session Deciphering The Denisovans  
9:

***Invited Podium Symposium.*** Chair: C. Eduardo Guerra Amorim.

Co-organizers: Serena Tucci, Princeton University .

### **CC Ballroom A.**

Nested in the Altai Mountains in southern Siberia, there is a cave that revealed one of the most stunning scientific discoveries that have been made in recent years: the Denisovans. This elusive new archaic hominin species, distinct from Neanderthals and modern humans, is currently known only for its DNA extracted mostly from a terminal phalanx bone, probably from the left fifth digit ("pinky bone") of a girl who lived around 41,000 years ago. Her group and their descendants left very little behind. The sequencing of their genome in 2010, however, showed that substantial amounts of their DNA still persist today in modern human populations in Melanesia. Celebrating the 10<sup>th</sup> anniversary of the excavation of this specimen, this symposium will bring together archaeologists, geneticists, and paleoanthropologists in order to expand and explore the most exciting findings made in the past 10 years related to this archaic hominin group. Furthermore, this interdisciplinary venue will also point out to the next steps involving the study of this species, the technological innovations that are enabling scientists to discover more about these archaic humans, the mystery involving their place in human evolution, their geographical range, their interactions with Neanderthals, and the legacy they left to modern humans. While many questions remain unanswered, there is one thing we can be sure about – Denisovans changed our paradigm about human evolution and how we understand our species. Thus, this symposium represents a timely opportunity to promote cooperation and discussion among researchers from different fields and strengthen the role our discipline will play in the following years in the study of archaic humans.

**8:00 Technology overview and orientation.**

**8:15 A parietal fragment from Denisova cave.** B.T. VIOLA, P. GUNZ, S. NEUBAUER, V. SLON, M.B. KOZLIKIN, M.V. SHUNKOV, M. MEYER, S. PÄÄBO, A.P. DEREVIANKO.

**8:30 Placing the Denisovans in human evolution.** C.B. STRINGER.

**8:45 What do Denisovans look like? Looking into the Middle and Late Pleistocene hominin fossil record from Asia.** M. MARTINON-TORRES, B. JOSÉ MARÍA, X. SONG, W. XIUJIE, L. WU.

**9:00 Age estimates for hominin fossils and the onset of the Upper Palaeolithic at Denisova Cave.** T. HIGHAM, K. DOUKA, V. SLON, Z. JACOBS, C. RAMSEY, F. MAFESSONI, M. KOZLIKIN, B. LI, D. COMESKEY, T. DEVIESE, S. BROWN, B. VIOLA, M. BUCKLEY, M. MEYER, R. ROBERTS, S. PAABO, A. DEREVIANKO, M. SHUNKOV, J. KELSO.

- 9:15 **In search of the Denisovans: biomolecular ways for the identification of new human fossils in the Eurasian archaeological record.** K. DOUKA, S. BROWN, T. HIGHAM, A. DEREVIANKO, M. SHUNKOV.
- 9:30 **Archaic encounters: Retracing interactions between Neandertals and Denisovans.** V. SLON.
- 9:45 **Predation at Denisova cave during the Middle Paleolithic: a story of human and beasts.** W. RENDU, S. VASILYEV, M. KOZLIKIN, M. BAUMANN, M. SHUNKOV.
- 10:00 **BREAK.**
- 10:30 **Through introgressed DNA, a single genome contains the story of many populations.** B. VERNOT.
- 10:45 **Multiple deeply divergent Denisovan ancestries in Papuans.** G.S. JACOBS, G. HUDJASHOV, S. LAURI, K. PRADIPTAJATI, C.C. DARUSALLAM, D.J. LAWSON, M. MAYUKH, L. PAGANI, F. RICAUT, M. STONEKING, M. METSPALU, H. SUDOYO, J. LANSING, M.P. COX.
- 11:00 **The landscape of Denisovan ancestry in the Americas.** E. HUERTA-SANCHEZ, K. WITT-DILLON, A. FUNK, L. LOPEZ.
- 11:15 **Discussant: John Hawkes.**
- Session Paleodemography, Health, and Disease  
10:

*Contributed Podium Presentations.* Chair: Molly Zuckerman.

**CC Room 26 AB.**

- 2:30 **Untangling the Osteological Paradox: Using Discordance in Dental and Skeletal Age Estimates to Identify Periods of Heightened Biosocial Stress.** C.B. MCPHERSON, J.T. WATSON.
- 2:45 **Survivorship and urbanization in medieval england.** E.S. HOOK, B.S. WALTER, S.N. DEWITTE.
- 3:00 **The impact of frailty in the Spanish influenza pandemic of 1918.** A. WISSLER.
- 3:15 **A Woman's World: Approaches to exploring obstetrical dilemmas in past populations.** C. MCGOVERN.
- 3:30 **The Deciduous Dilemma – New perspectives from Neolithic Northern Vietnam for studying health and stress in infants.** A.B. ADAMS, S.E. HALCROW, M.F. OXENHAM.
- 3:45 **Tooth Size and Vertebral Neural Canal Size as Bioarchaeological Evidence of the Developmental Origins of Health and Disease Hypothesis.** S.L. YAUSSY.
- 4:00 **Black Sea steppe warriors: health status and demographic structure of the Scythians from Moldova (4th-2nd c. BC).** S. ŁUKASIK, J. BIJAK, M. KRENZ-NIEDBAŁA, V. SINIKA.
- 4:15 **Bioarchaeological Signatures of Health and Inequality at the Middle Bronze Age Rural Site Kaman-Kalehöyük.** C.P. ANDERSON, L. ATICI, S. OMURA.

- 4:30 **Investigating social organization and community composition at the Tiwanaku-style temple complex of Omo M10 in the Moquegua Valley, Peru through analysis of phenotypic variation.** K.M. JOHNSON.
- 4:45 **As the World Churns: Changing Activities and Identities in a Historic Dutch Dairy Farming Community.** C. CHILCOTE, S.C. AGARWAL, A. WATERS-RIST, M. HOOGLAND.
- 5:00 **The Impact of the Roman Conquest of Egypt on the Non-Elite - Evidence from the Wall of the Crow Cemetery at Giza.** J.E. KAISER.
- 5:15 **Does dental fluctuating asymmetry predict lesion status in systemic stress indicators? Kind of....** A. O'DONNELL, E. MOES, K. RUSK.

Session Primate Social Behavior  
11:

*Contributed Podium Presentations.* Chair: Andrew Halloran.

**CC Room 26 AB.**

- 8:00 **Changes in Male Grooming Networks Associated With Permanent Fission of a Chimpanzee Community at Ngogo.** D.P. WATTS.
- 8:15 **Nepotistic cooperation among maternal and paternal kin in male chimpanzees from Gombe National Park, Tanzania.** J.T. FELDBLUM, K.K. WALKER, I.C. GILBY, A.E. PUSEY.
- 8:30 **Factors influencing the strength, equality, and stability of male chimpanzee social bonds at Gombe National Park.** J. BRAY, I.C. GILBY.
- 8:45 **Act like a lady, think like a boss: Alpha status in a captive female chimpanzee (*Pan troglodytes*).** B.F. WISINSKI, C. CLOUTIER BARBOUR.
- 9:00 **Re-evaluating the analysis of dominance: Investigations of dominance in captive chimpanzees (*Pan troglodytes*) and wild Tibetan macaques (*Macaca thibetana*) from a context-dependent perspective.** J.A. FUNKHOUSER, J.A. MAYHEW, L.K. SHEERAN.
- 9:15 **Absolute brain size correlates very strongly with social group size in Primates.** P. SCHOENEMANN.
- 9:30 **Flexible grouping patterns of lowland woolly monkeys (*Lagothrix lagotricha poeppigii*): evidence of a multilevel society in a New World primate?** K.M. ELLIS, L. ABONDANO, A. DI FIORE.
- 9:45 **Sex differences in behavioral coordination in white-bellied spider monkeys.** C.J. SCARRY, A. LINK, A. DI FIORE.
- 10:00 **BREAK.**
- 10:30 **Urinary oxytocin in capuchin monkeys: Validation and the influence of social behavior.** M.E. BENITEZ, M.J. SOSNOWSKI, O.B. TOMELO, S.F. BROSINAN.
- 10:45 **Allomaternal Care by Conspecifics Influences Activity Budgets of *Colobus guereza* Mothers.** D.L. RABOIN, A.L. BADEN, J.M. ROTHMAN.
- 11:00 **A meta-analysis of fission-fusion dynamics: towards a standardization of methods to facilitate inter- and intra-species comparisons.** C.H. BATIST, A.L. BADEN.

Session Primate Craniodental Functional Morphology  
12:

**Contributed Podium Presentations.** Chair: Mark Teaford.

**CC Room 26 AB.**

- 8:00 **Covariation among dental wear, craniofacial morphology, and pathologies in *Macaca fascicularis*.** C.A. KIRCHHOFF, S.B. COOKE, C.E. TERHUNE, A.N. ROMERO.
- 8:15 **The effects of diet on chewing muscle ontogeny in lemurs.** K.A. PRUFROCK, J.M. PERRY.
- 8:30 **The uncertainty of the potto and exudate-feeding in Lorisidae.** A. BURROWS, A. HARTSTONE-ROSE, L.T. NASH, M.T. SILCOX, K.R. SELIG, S. LÓPEZ-TORRES.
- 8:45 **The effect of jaw muscle architecture dynamics on the biomechanics and evolution of the primate feeding system: a theoretical perspective.** J. IRIARTE-DIAZ.
- 9:00 **Modelling ontogenetic changes in masticatory performance within *Macaca fascicularis* and their impact upon dietary and social ecology: a multibody dynamics study.** E. DICKINSON, L.C. FITTON, K. KUPCZIK.
- 9:15 **Ontogenetic allometry in catarrhine crania: scaled variants or variance in scaling?** E.A. SIMONS, S.R. FROST.
- 9:30 **Strain regimes in the ramus of *Macaca mulatta* estimated using finite element modeling.** C.F. ROSS, J. IRIARTE-DIAZ, A.B. TAYLOR, P.C. DECHOW, S. WILSHIN, H. MEHARI ABRAHA, O. PANAGIOTOPOULOU.
- 9:45 **Particle Based Modeling (PBM) Geometric Morphometric Analysis of the basioccipital bone in *Pax7*-deficient mice.** L. NEVELL, J. CATES, S. PRAJAPATI, L.D. NELON, J. CHANG, M.E. RANDOLPH, B. WOOD, C. KELLER, R.T. WHITAKER.
- 10:00 **BREAK.**
- 10:30 **Fiber-type phenotype of the anterior superficial masseter in African apes: A preliminary test of the frequent recruitment hypothesis.** A.B. TAYLOR, M. WEST, M. HOLMES.
- 10:45 **Investigating variation in euarchontan dental topography as a signal of dietary breadth.** K.R. SELIG, M.S. RAMSAY, M.T. SILCOX.
- 11:00 **Enamel growth variation corresponds with LEH defect depth in great apes.** K. MCGRATH, D.J. REID, D. GUATELLI-STEINBERG, K. ARBENZ-SMITH, S. EL-ZAATARI, L.M. FATICA, M.R. CRANFIELD, T.S. STOINSKI, T.G. BROMAGE, A. MUDAKIKWA, S.C. MCFARLIN.
- 11:15 **Predicting distribution of enamel on a tooth.** J. JERNVALL, T.J. HÄKKINEN, S. SOVA, I.J. CORFE.

Session Primate Genetics  
13:

**Contributed Podium Presentations.** Chair: Leslie Knapp.

**CC Room 26 C.**

- 8:00 **Adventures in museuomics: The use of next generation sequencing to uncover great ape host and microbial genomes.** A.T. OZGA, A.C. STONE.
- 8:15 **Testing factors influencing the lemur gut microbiome: host genetics or diet?** A.E. ASANGBA, M. DONOHUE, A. LAMB, R.J. LEWIS, R.E. JUNGE, M. IRWIN, S.R. LEIGH, P.C. WRIGHT, R.M. STUMPF.
- 8:30 **Variation in butyrate-production pathways across human and nonhuman primates.** E.K. MALLOTT, K.R. AMATO.
- 8:45 ***Amylase* copy number analysis in several mammalian lineages reveals convergent adaptive bursts shaped by diet.** P. PAJIC, P. PAVLIDIS, K. DEAN, L. NEZNANOVA, E. DAUGHERITY, R. ROMANO, D. GARNEAU, A. GLOBIG, O. GOKCUMEN, S. RUHL.
- 9:00 **Age-Associated Epigenetic Changes in Chimpanzees and Humans.** E.E. GUEVARA, R.R. LAWLER, N. STAES, C.M. WHITE, C.C. SHERWOOD, J.J. ELY, W.D. HOPKINS, B.J. BRADLEY.
- 9:15 **Divergence between humans and chimpanzees at the cellular level.** T.M. ZINTEL, D. DUCEY, J. PIZZOLLO, C.C. BABBITT.
- 9:30 **The Evolution of TLR7 and TLR8 in Yellow Fever Virus Endemic Areas.** N. TOROSIN, L.A. KNAPP.
- 9:45 ***Papa-B (MHC)* diversity of wild bonobos (*Pan paniscus*) east and west of the Lomami River suggest different patterns of immunity.** E.E. WROBLEWSKI, A.G. ANDERSON, L.A. GUETHLEIN, Y. LI, A.N. AVITTO, P. BERTOLANI, J.A. HART, T.B. HART, B.H. HAHN, P. PARHAM.
- 10:00 **BREAK.**
- 10:30 **Macaque Y-chromosome introgression: Proteomic analysis of four Y-genes between rhesus (*Macaca mulatta*) and cynomolgus (*M. fascicularis*) macaques.** C.A. RUIZ, M.E. CHANEY, A.J. TOSI.
- 10:45 **Tracing gibbon phylogeography in Southeast Asia using complete mitochondrial genomes.** L. YAO, R. DESALLE, C. ROOS.
- 11:00 **Noninvasive genomics of Gombe chimpanzees: evaluating methods for wild primate population genomics.** T.H. WEBSTER, A.T. OZGA, I.C. GILBY, M.A. WILSON SAYRES, Y. LI, B.H. HAHN, R.S. NOCKERTS, M.A. WILSON, A.E. PUSEY, A.C. STONE.

Session Anthroengineering: a biological approach  
14:

*Invited Poster Symposium.* Chair: Michael A. Berthaume.

Co-organizers: Patricia Ann Kramer, Department of Anthropology, University of Washington, Seattle, WA.

## CC Room 22.

Traditionally, anthropology and engineering have developed and operated in isolation, but recent advances in interdisciplinary research, supporting new, novel ways of

thinking, has encouraged the two fields to work together to address significant questions within and across fields. The combination of cutting edge engineering techniques, such as multibody dynamic and finite element analysis, with advanced biological principles, such as functional bone remodelling and evolutionary adaptation, has undoubtedly benefited the field of biological anthropology. Using engineering and biological anthropology together has shed new light on human and primate evolution and biological adaptation. Within biological anthropology, anthroengineering has revolutionized our understanding of primate and human locomotion and dietary adaptation, helping us understand how evolution has shaped the order Primates and how humans evolved to become what we are today. This symposium serves two purposes: to formally introduce the subfield of anthroengineering and to discuss its role in biological anthropology. The use of engineering techniques has already improved our understanding of primate locomotion and diet, and yet the full utility of an integrated anthroengineering approach has not yet been realized. We seek with this symposium to extend the foundational work by discussing how to move forward approaching questions of anthropological interest from an anthroengineering perspective.

- 1 **South African hominin dental biomechanics.** M.A. BERTHAUME, K. KUPCZIK.
- 2 **Micro- and macro-wear of human dental enamel. A materials science perspective.** O. BORRERO-LOPEZ, A. PAJARES, P.J. CONSTANTINO, B.R. LAWN.
- 3 **Investigating dietary properties and the feeding ecologies of lemurs in human-maintained habitats.** S.L. CANINGTON, J.M. PERRY.
- 4 ***In vivo* bending deformation of the human lumbar spine during axial loading: Implications for hominin postural adaptation.** E.R. CASTILLO, D.E. LIEBERMAN.
- 5 **Dental Fracture Mechanics: What broken teeth can reveal about diet and feeding behavior.** P.J. CONSTANTINO, B.R. LAWN.
- 6 **Investigating fossil hominin climbing behaviors: Novel applications of existing technology.** E.M. FEUERRIEGEL, P.A. KRAMER.
- 7 **Dentin hardness distribution and chewing frequency in two sympatric colobines.** E. GEISLER, W.S. MCGRAW, D.J. DAEGLING.
- 8 **Deforming feet, deforming substrates: 3D dynamics of the human foot during footprint formation revealed through biplanar X-ray methods.** K.G. HATALA, S. MEGHERHI, D.A. PERRY, S.M. GATESY.
- 9 **Design and function of the chewing muscles in papionins: fiber phenotype and fiber architecture.** M.A. HOLMES, K. LUNN, A.B. TAYLOR.
- 10 **Saving face: the role of artificial intelligence in evaluating craniofacial variation for the treatment of orofacial dysfunction.** M.J. KESTERKE, G. SANKARANARAYANAN, M. SAUTTER, R. BHATTACHARYA, R. BHATTACHARJEE, A. READ-FULLER, L.V. REDDY.

- 11 **Three-dimensional tarsal morphology and movements in anthropoid primates.** S. KUO, M.C. GRANATOSKY, M.F. LAIRD, B. PATEL, C. ORR, C.F. ROSS, C.V. WARD.
- 12 **Bone remodeling in the macaque (*Macaca fascicularis*) skeleton: effects of loading frequency and magnitude.** S.E. LAD, W. MCGRAW, D.J. DA EGLING.
- 13 **Food mechanical properties and dietary ecology in sympatric *Pithecia* and *Chiropotes* during a period of preferred food scarcity.** J.A. LEDOGAR, B.W. WRIGHT, M.C. GRANATOSKY, M.F. LAIRD, J. CHALK-WILAYTO, M.D. FOGAÇA, A. VAN CASTEREN, C.F. ROSS, D.S. STRAIT.
- 14 **Anticipating turns: How many steps are affected?** M. OCHOA, S.G. LAUTZENHEISER, A.D. SYLVESTER, P.A. KRAMER.
- 15 **The mechanical and nutritional properties of African savanna vegetation: potential implications for early hominin feeding behavior.** O.C. PAINE, A. KOPPA, A.G. HENRY, J.N. LEICHLITER, E.J. DEVEREUX, C. RYDER, D. CODRON, J. CODRON, M. SPONHEIMER.
- 16 **Comparative biomechanics of the Hominidae mandible.** A.L. SMITH, C.F. ROSS, Z. ALEMSEGED, A.B. TAYLOR, C. ROBINSON, C.V. WARD, P. GUNZ, B. KIMBEL.
- 17 **The effects of femoral metaphyseal morphology on growth plate biomechanics in juvenile apes and humans.** P.A. STAMOS, M.A. BERTHAUME.
- 18 **Fragmentation as a function of cyclical work between immature and mature leaves.** J.N. TRAFF, D.J. DA EGLING.

Session True Grit: the effect of dietary grit on dental wear  
15:

*Invited Poster Symposium.* Chair: Myra F. Laird.

Co-organizers: Adam van Casteren; Department of Anthropology, Washington University of St. Louis.

### **CC Room 23.**

Dental microwear techniques are used to reconstruct dietary transitions in human evolution and ecological differences within extant primates. Variation in dental microwear is thought to reflect differences in food mechanical properties. More recently, dust and other dietary grit has been proposed as to drive dental microwear formation. However, questions remain as to the amount and types of grit affecting dental wear. Behavioral studies suggest primates react diversely to dietary grit, yet we know little about the influence that ecology and feeding behaviors may have an effect on the incorporation of grit into diet and how this could influence dental wear formation and selective pressures. This symposium will explore the effect of dietary grit on dental wear using a two-pronged approach. Half of the presenters focus on how grit is arrayed within an environment, and primate behavioral responses to dietary grit. The other half examines the influence of dietary grit on dental wear using an array of techniques and species. Ideas we will explore include: Where is grit found in a

primate's habitat? How does grit become included in diet? How does dietary grit influence primate feeding behavior? What types of dietary grit influence dental morphology? How much dietary grit is needed to influence microwear formation? Our synthesis of sub-disciplines within biological anthropology and diverse approaches to studying dietary grit will facilitate discussions on distinguishing dietary and grit-related signals in dental morphology.

10:00 **Break.**

**Discussant: Peter Lucas.**

- 1 **Grit in unexpected places: The prevalence of grit in the diets of robust capuchin species.** A. VAN CASTEREN, M.D. FOGAÇA, D.M. FRAGASZY, P. IZAR, C.F. ROSS, R.S. SCOTT, B.W. WRIGHT, K.A. WRIGHT, D.S. STRAIT.
- 2 **The behavioral ecology of grit avoidance in gelada monkeys.** V.V. VENKATARAMAN, P.J. FASHING, N. NGUYEN.
- 3 **Mechanisms for avoiding sand-laden foods in a population of coastal foraging monkeys (*Macaca fascicularis*).** J.E. ROSIEN, N.J. DOMINY, S. MALAIVIJITNOND, A.W. TAN.
- 4 **The influence of dietary grit on capuchin feeding behavior.** M.F. LAIRD, M.C. GRANATOSKY, C.F. ROSS.
- 5 **Periodical increase of dust load reduces chewing efficiency in forest dwelling Western chimpanzees (*Pan troglodytes verus*).** E. SCHULZ-KORNAS, J. STUHLTRÄGER, M. CLAUSS, R.M. WITTIG, K. KUPCZIK.
- 6 **Effects of particle concentration and size on tooth wear.** F. RODRIGUEZ-ROJAS, O. BORRERO-LOPEZ, P.J. CONSTANTINO, F. GUIBERTEAU, B.R. LAWN.
- 7 **The role of grit in dental microwear textures: evidence from Artificial Resynthesis Technology (ART).** K.L. KRUEGER, E. CHWA, A. PETERSON, R. DELONG, A. FOK.
- 8 **Toward a volumetric and chronometric measure of tooth wear rates in ovicaprines.** R.H. MADDEN, J. LEMBERG, J.P. PARKES, B.A. BUCHHOLZ.
- 9 **Impacts of grit on dental microwear formation: a time series approach.** L.R. DESANTIS, M.F. TEAFORD, M. DUTRA FOGAÇA.
- 10 **Function and variation in the mechanical properties of *Papio anubis* tooth enamel.** F.R. FOSTER.
- 11 **Diet, Grit and Dental Microwear Textures: the facts.** G. MERCERON, L. DESANTIS, P.S. UNGAR.
- 12 **Dental microwear in laboratory primates: Insights into the complexity of dental microwear formation.** M.F. TEAFORD, M.F. LAIRD, C.F. ROSS, A.B. TAYLOR, P.S. UNGAR, C.J. VINYARD.

Session Biocultural Approaches to the Plasticity of the Human Skeleton  
16:

*Invited Poster Symposium.* Chair: Sophia C. Dent.

Co-organizers: Steph M. Berger, Jacob S. Griffin .



## CC Room 24.

Human skeletal phenotypes result from complex interactions between the body's physiology and environmental influences. Bone is one of the largest tissues in the human body, and its integration with other physiological systems allows the skeleton to serve as a sensitive indicator of context at individual and population levels - how does the skeleton embody inputs such as developmental environment, diet, and energetics, and how does change over time in skeletal phenotypes elucidate larger evolutionary trends? Bioarchaeological analysis of skeletal remains utilize osseous measures and related biomarkers to generate diachronic data on the variability of skeletal phenotypic expression. In comparison, the study of skeletons in living people integrates measures of skeletal plasticity with biomarkers of physiological functioning and directly observable environmental influences to understand the biocultural contexts and mechanisms contributing to skeletal phenotypes. The purpose of this symposium is to bring the study of past and living skeletons together - to reconstruct how skeletal phenotypes result from an interplay of physiological reactions, and to better understand the various ways in which bone specifically adapts to and records its context. This requires a focus on pathways, and we embrace the multiple definitions of the term: a series of chemical reactions in a living organism; neurological communication among organs; and a course of action to achieve a desired result. The participants in this symposium represent research that focuses on chemical pathways by which bones integrate context, considers bone within the framework of its relationship with other organs, and/or explores and develops common measurements, models, and theoretical frameworks that unite the study of skeletons in the past and present. A focus on pathways linking biocultural context to skeletal phenotypes, whether they are theoretical and/or testable, will allow us to explore and discuss interdisciplinary engagement and bridging the gap between human biology and bioarchaeology.

**Discussant: Laurie J. Reitsema.**

- 1 Porotic cranial lesions in living forager-horticulturalists: theoretical pathways and preliminary evidence.** A.S. ANDERSON, A.D. BLACKWELL, B.C. TRUMBLE, R.C. THOMPSON, L.S. WANN, A.H. ALLAM, B. FROHLICH, M.L. SUTHERLAND, J.D. SUTHERLAND, J. STIEGLITZ, D.E. RODRIGUEZ, A. IRIMIA, M. LAW, G. BARISANO, H. CHUI, D.E. MICHALIK, C. ROWAN, G. LOMBARDI, R. BEDI, A.R. GARCIA, D. CUMMINGS, J.K. MIN, J. NARULA, C.E. FINCH, G.S. THOMAS, H. KAPLAN, M. GURVEN.
- 2 Exploring pathways to skeletal phenotypes: Biomarkers of inflammation, skeletal health, and oral health in NHANES 2003-2004.** S.C. DENT, S.M. BERGER, J.S. GRIFFIN.
- 3 Variation in the human calcaneus: investigating the relationship between skeletal phenotype and behavior.** L.J. DOERSHUK, N.B. STEPHENS, J.P. SAERS, T. JASHASHVILI, K.J. CARLSON, A.D. GORDON, J.T. STOCK, T.M. RYAN.
- 4 Exploring pathways to skeletal phenotypes: Biomarkers of skeletal health and bone mineral density in NHANES 2003-2004.** J. GRIFFIN, S. BERGER, S. DENT.

- 5 **Critical ages of development: Impacts of post-natal early-life stress at the Greek colony Himera (Sicily).** M. QUADIR, C.J. GARLAND, L.J. REITSEMA, S. VASALLO, B. KYLE.
- 6 **Correlations between dental wear and oral cavity characteristics: Mandibular torus, palatine torus, and oral exostoses.** L.R. LEASE.
- 7 **Estrogen, energy, and skeletal biology: Life history approaches to understanding skeletal phenotype in living women of reproductive age.** K.M. LEE, M.P. ROGERS, A. GALBARCZYK, G. JASIENSKA, J.D. POLK, K.B. CLANCY.
- 8 **Do teeth forming in different early life periods show differential discrepancy with known age?** J.S. NELSON, L. HARRINGTON, E. HOLLAND, H.F. CARDOSO.
- 9 **The cost of survival: the contextual analysis of adaptive plasticity and constraint in human skeletal and dental remains.** D. TEMPLE.
- 10 **EVALUATING LIFE HISTORY TRADE-OFFS THROUGH THE PRESENCE OF LINEAR ENAMEL HYPOPLASIA AT PUEBLO BONITO AND HAWIKKU: A BIOCULTURAL STUDY OF EARLY LIFE STRESS AND SURVIVAL IN THE ANCESTRAL PUEBLO SOUTHWEST.** A. HAM, D. TEMPLE, H. KLAUS, D. HUNT.

## **Thursday, Afternoon sessions.**

Session 17: The Missing Dead: Underrepresented Groups in Bioarchaeology and Forensic Anthropology

*Invited Podium Symposium.* Chair: Susan Guise. Sheridan.

### **CC Ballroom A.**

By definition, bioarchaeology is an integrative field of anthropology. The adoption of a biocultural approach has resulted in a shift from case-specific, descriptive studies to synthetic analyses of past adaptation. Today, bioarchaeology readily employs social theory, epidemiological models such as the developmental origins of health and disease (DOHaD), organic and analytical chemistry techniques, advanced statistical modeling, and 3D imaging, to name a few. Nevertheless, the field is hampered by the missing – those not seen in the bioarchaeological record. As a result, reconstructions of demography, diet, disease, daily life, death (remembrance and commemoration), and biodistance suffer. This is due to a variety of factors, including the limited ways skeletal material can respond to physiological change, poor excavation and curation practices, and at times, a lack of imagination about who is not readily identifiable in skeletal assemblages and why. This session will explore ways these underrepresented groups are being addressed, both bioarchaeologically and forensically, of particular interest in today's political climate. Topics include socio-political exclusion, such as migrants, the institutionalized, LGBTQI individuals, women, the impoverished, and slaves; as well as those missing due methodological limits such as the very young and

old, burned remains, mixed and fragmented collections resulting from poor curation, looting, war, and/or burial practices. To ignore these individual biases our interpretation of the past. This session will provide an overview of the missing, explore shifting paradigms permitting new hypothesis generation, offer specific examples of successful integration of these categories, and offer future directions for expanded bioarchaeological investigations.

- 2:30 **Missing migrants and the search for identity.** L.E. BAKER.
- 2:45 **Until They All Come Home: The Recovery and Identification of America's Prisoner of War/Missing in Action Personnel.** J.R. GOLIATH.
- 3:00 **Using commingled and fragmentary remains to reconstruct social interaction and social change.** A.J. OSTERHOLTZ, A. LOPEZ, J. PAIGE, D.L. MARTIN, K. BAUSTIAN.
- 3:15 **Incomplete (or completely missing) skeletal collections as the result of excavation and curation practices.** J.M. ULLINGER.
- 3:30 **Missing identities: Identifying burned and cremated remains in bioarchaeological and forensic settings.** C.W. SCHMIDT, R.L. QUATAERT.
- 3:45 **In search of the missing, the overlooked, and the invisible: paleodemographic conundrums, sexuality and gender, and epigenetics in Lambayeque bioarchaeology.** H.D. KLAUS.
- 4:00 **Uncovering the institutionalized: Reconstructing the interplay of gender, sex, and social race on the lives of women institutionalized in the Mississippi State Asylum, Jackson, MS (AD 1855-1935).** M.K. ZUCKERMAN.
- 4:15 **The fetus in bioarchaeology: new approaches to unlocking the maternal-infant nexus.** S. HALCROW, A. SNODDY, C. KING, A. ADAMS, B. ARRIAZA, V. STANDEN, M. OXENHAM.
- 4:30 **AT THE INTERSECTION OF GENDER, AGE, AND RACE: The Complexity of Social Identity in Early-20<sup>th</sup> Century Cuba.** P.L. GELLER.
- 4:45 **Assessing the existence of the male-female health-survival paradox in past populations.** S.N. DEWITTE.
- 5:00 **Countering the Invisibility of Disability in Bioarchaeology.** J.L. MULLER.
- 5:15 **Missing anthropologists: The lack of minority representation in bioanthropology.** A. FUENTES, S.G. SHERIDAN.
- 5:30 **Discussant: Sabrina Agarwal.**

Session 18: Primate hosts and microbial interactions and communities: disease, development and evolution

*Invited Podium Symposium.* Chair: Negin Valizadegan.

Co-organizers: Negin Valizadegan, Department of Anthropology, University of Illinois at Urbana-Champaign; Jessica F. Brinkworth, Department of Anthropology, University of Illinois at Urbana-Champaign .

## CC Room 25.

This symposium features cutting edge research by a diverse and multidisciplinary group of scholars on the evolutionary interactions between primate immunity, microbiota and their effect on health and disease. Primates have co-evolved with microorganisms for millions of years, such that some microbial communities direct tissue and organ development and function, ensure tissue integrity, enable immunity and affect metabolism. In disease states, these communities are disrupted, and can contribute to symptoms and mortality. The distribution of microorganisms across vector populations and host bodies, therefore, has major implications for health and reproductive fitness. Understanding the patterns of microbial colonization and function is not only important for explaining differences in primate health and disease, but may also clarify mechanisms driving variation and divergence of species. This symposium presents new research from biological anthropology as well as immunology, microbiology, cancer biology and HIV research that illuminates the roles of multi-way interactions between microbial communities, hosts, pathogens and vectors in primate disease susceptibility and progress. Authors investigate relationships between microbiota and disease states, growth and development and environment in both extant and ancient host populations, and how these relationships have affected host immune function and variation. Our goal in this symposium is to contribute to a better understanding of how microorganisms operate in immunity, health and primate evolution. As this kind of research has important implications for primate evolution, conservation and human health, this symposium will draw high attendance and have significant scientific impact. We aim to publish the symposium in an edited volume or a special issue of an appropriate peer-reviewed journal in the following year.

- 2:30 **Development of gut microbiota and the brain across the first year of life: A longitudinal study of human infants.** M. FOX.
- 2:45 **Ancient oral microbiome of a fisher-hunter-gatherer community from the Pacific Northwest Coast.** A.C. BADER, K.R. AMATO, J.F. BRINKWORTH, K. YARLAGADDA, J.S. CYBULSKI, J. MITCHELL, B. PETZELT, R.S. MALHI.
- 3:00 **Characterization of the microbiome in the AIDS-resistant natural host Sooty mangabey monkey (*Cercocebus atys*).** R.M. BOCHART, S.E. BOSINGER, J. COHEN, G. THARP, S. JEAN, A. ERICSEN, B. MADETI, M. CRANE.
- 3:30 **Anthropology-parasitology-microbiome perspectives on human evolutionary medicine.** G. PERRY, D. HERNANDEZ.
- 3:45 **Examining patterns in gut microbial eukaryotes and bacteria across the primate phylogeny.** K.R. AMATO, A. MANN, F. MAZEL, E. MORIEN, V. BILLY, L. PARFREY.
- 4:00 **The skin microbiome of the Cayo Santiago rhesus macaques.** C. ROCHE, L. BRENT, J. WANG, M. MONTAGUE, K. WATSON, A. RUIZ LAMBIDES, M. PLATT, J. HORVATH.

- 4:15 **The Role of Microbiota in Human Reproductive Tract Cancers.** D.M. WALSH, I. MERT, J. CHEN, X. HOU, S.J. WEROHA, N. CHIA, H. NELSON, A. MARIANI, M.R. WALTHER-ANTONIO.
- 4:30 **The Wild Primate Microbiome Partially Protects Against Obesity.** J.B. CLAYTON, D. SIDIROPOULOS, G. AL-GHALITH, T. WARD, R. SHIELDS-CUTLER, A. JOHNSON, P. VANGAY, R. BLEKHMANN, P. KASHYAP, A. RAMER-TAIT, D. KNIGHTS.
- 4:45 **The Blood Microbiome of Human and Non-Human Primates.** N. VALIZADEGAN, R.M. STUMPF, J.F. BRINKWORTH.
- 5:00 **Early environments and the development of the human microbiome: implications for growth and health.** A.L. THOMPSON, K.M. HOUCK.
- 5:15 **Assessing the Prevalence and Distribution of Antimicrobial Resistance at the Human-Wildlife Interface in Rural Uganda.** R.M. STUMPF, A. ASANGBA, C. IRUMBA, M. AINEBYONA, R. RUSEN, R.L. SMITH, H. ONYUTH, K. GIGGS.
- 5:30 **Microbial mismatch: The evolution of the primate microbiome.** E.A. MCKENNEY, M.S. THOEMMES.
- 5:45 **Discussant: Beth Archie.**

Session Evolutionary Anatomy, Functional Morphology, and Adaptation  
19:

*Contributed Podium Presentations.* Chair: Emily Middleton.

**CC Room 21.**

- 2:30 **Effects of Binocular Field Width on Grasping Performance in *Cheirogaleus* and *Microcebus*: Implications for Primate Origins.** A.D. KEMP.
- 2:45 **Can the humeri of the *Adapis* group shed new light on the locomotor repertoire of these early primates? New data using 3D Geometric Morphometrics on the distal humerus.** J. MARIGÓ, A. FABRE, N. VERRIÈRE, M. GODINOT.
- 3:00 **Identifying plantigrade adaptations in Miocene hominoids with implications for hominin bipedalism.** E.J. MCNUTT.
- 3:15 **An ape partial postcranial skeleton from the Middle Miocene of Napudet, Turkana Basin, Kenya.** G.A. RUSSO, C.V. WARD, S. KUO, F.R. MCGECHIE, I.O. NENGO.
- 3:30 **First complete primate skull from La Venta, Colombia.** S.B. COOKE, L.B. HALENAR-PRICE, L. STROIK, A. LINK, G.A. GIRALDO CORREA, B. SHEARER, R.P. KNIGGE, M. TALLMAN.
- 3:45 **The taxonomic status of the large-bodied colobine specimen KNM-WT 16827.** M. ANDERSON.
- 4:00 **First metacarpal trabecular morphology: Implications for thumb use in great apes and *Australopithecus*.** C.J. DUNMORE, T.L. KIVELL, N.B. STEPHENS, A. BARDO, J. HUBLIN, M.M. SKINNER.
- 4:15 **Bigger bipeds should have shorter arms: a new perspective in hominin limb evolution.** A.K. YEGIAN.

- 4:30 **Great apes and humans evolved from a long-back ancestor.** A.L. MACHNICKI, P.L. RENO.
- 4:45 **Testing hypotheses about the relationships between diet and the primate torso: Implications for human evolution.** E.K. BOYLE, S. ALMÉCIJA.
- 5:00 **Sociality and diet drove selection for shifts in primate brain size.** M. GRABOWSKI, B.T. KOPPERUD, M. TSUBOI, T.F. HANSEN.
- 5:15 **Experimental animal models for domestication: insights into modern human craniofacial evolution.** N. SINGH, K. HARVATI.

Session Genotype - Phenotype Studies  
20:

*Contributed Podium Presentations.* Chair: Fatimah Jackson.

**CC Room 26 C.**

- 2:30 ***In vitro* gene regulatory responses to growth factors in short-statured African rainforest hunter-gatherers.** C.M. BERGEY, K.E. GROGAN, G.F. HARRISON, V.G. YOTOVA, L.B. BARREIRO, G. PERRY.
- 2:45 **Investigating human stature variation in prehistory with per-individual ancient DNA and osteological data.** S. MARCINIAK, C.M. BERGEY, A. SILVA, A. HAŁUSZKO, M. FURMANEK, B. VESELKA, P. VELEMINSKY, G. VERCELLOTTI, J. WAHL, K. KISS, T. HAJDU, N. VON CRAMON-TAUBADEL, R. PINHASI, G. PERRY.
- 3:00 **Ancient DNA reveals genetic effects on anthropometric phenotypes in Prehistoric Europe.** S.L. COX, C.B. RUFF, I. MATHIESON.
- 3:15 **Evolutionary genomic patterns of recent natural selection on body size sexual dimorphism in *Homo sapiens*.** A.M. ARNER, K.E. GROGAN, C.M. BERGEY, H. REYES-CENTENO, M. GRABOWSKI, G. PERRY.
- 3:30 **A new mouse model predicts the evolutionary effects of an ancient deletion polymorphism in the human growth hormone receptor gene.** S.D. RESENDEZ, M. SAITOU, K. DEAN, C.E. SCHANER TOOLEY, X. MU, O. GOKCUMEN.
- 3:45 **Meta-analysis identifies 48 SNPs with multiple independent effects on human facial features.** J.D. WHITE, J. ROOSENBOOM, K. INDENCLEEF, J. MOHAMMED, J. LI, A. ORTEGA-CASTRILLON, T. SWIGUT, M. LEE, T. GONZALEZ-ZARZAR, A.A. ZAIDI, J.R. SHAFFER, E. FEINGOLD, S. RICHMOND, R.J. ELLER, S. WALSH, M.L. MARAZITA, J. WYSOCKA, S.M. WEINBERG, P. CLAES, M.D. SHRIVER.
- 4:00 **SNPs discovered in European GWAS shape worldwide facial diversity.** M.D. SHRIVER, J.D. WHITE, T. LASISI, R.J. ELLER, T. GONZÁLEZ-ZARZAR, K. INDENCLEEF, J. LI, H. HOSKENS, A. ORTEGA-CASTRILLÓN, A. ZAIDI, S.M. WEINBERG, J. WYSOCKA, S. WALSH, J.M. AKEY, P. CLAES.
- 4:15 **Pigmentation variation and in admixed populations and associated genetic loci.** H.L. NORTON, A. BIGHAM, E.J. PARRA.
- 4:30 **Selection at adenylyl cyclase genes associated with tanning response in populations of the Americas.** E.E. QUILLEN, N.G. JABLONSKI, M.D. SHRIVER.

- 4:45 **New insights into human hair variation: High-throughput phenotyping paves way for genome-wide association studies and selection screens.** T. LASISI, A. ZAIDI, T.H. WEBSTER, N.G. JABLONSKI, M.D. SHRIVER.
- 5:00 **High Altitude Adaptation and the Evolutionary History of *EPAS1* Gene in Tibetan Population.** X. ZHANG, K. WITT, X. JIN, A. ASAN, R. NIELSEN, E. HUERTA-SANCHEZ.
- 5:15 **High variability and decoupling from phylogenetic effects characterize the human microbiome.** S.R. LEIGH, D. MCDONALD, N.J. DOMINY, T.L. GOLDBERG, J. LAMBERT, J.L. METCALF, A. GOMEZ, G.A. BRITTON, R.M. STUMPF, R. KNIGHT, E.K. MALLOTT, K.R. AMATO.
- 5:30 **Gut microbiome community composition is significantly influenced by shared living-space in rural agriculturalists from Burkina Faso.** D.K. JACOBSON, T.S. KAGONE, N. MEDA, H. CARABIN, T. HONAP, K. SANKARANARAYANAN, C.M. LEWIS, JR..
- 5:45 **Association of *MAOA* and *HTTLPR* genetic variants, trauma, resilience, and psychosocial outcomes in Syrian refugee youth.** C.J. CLUKAY, R. DAJANI, D. HAMADMAD, K. HADFIELD, C. PANTER-BRICK, C.J. MULLIGAN.

Session Teaching Bio Anth Within and Without a Classroom  
21:

***Invited Poster Symposium.*** Chair: Jessica L. Westin.

Co-organizers: Margarita Hernandez, Pennsylvania State University, Becca Peixotto, Perot Museum of Nature and Science, Molly Selba, University of Florida.

## **CC Room 22.**

Since its inception in 2014, the Committee on Diversity's Anthropologists outside of Anthropology departments, Contingent, and Teaching-focused faculty (AACT) Task Force has aimed to provide a venue for AAPA members outside of traditional research positions, and students aspiring to non-traditional (i.e. non-research or non-academic) careers. We have presented our work through poster sessions on education-related topics, and have hosted panels covering non-traditional career pathways. These events have generated great interest, and this year, AACT is teaming up with the AAPA Education Committee to host a poster session to share strategies for promoting education and outreach to the local community, K-12 education, and higher education. This poster session will highlight novel lesson plans, activities, and mentoring strategies created by anthropologists working in a variety of formal and informal education settings. We include submissions from research and teaching faculty, undergraduate and graduate students, museum professionals, and non-traditional educators. Symposium topics include units or lesson plans created for public outreach and education, efforts to mentor and train the next generation of teachers, how to present research to the public, museum education, and managing student projects.

**Discussant: Briana Pobiner.**

- 1 **Training Graduate Students To Be Effective Instructors: Our Experience With A Student-Led Pedagogy Interest Group.** K.M. LESCIOTTO, K. FLAHERTY.
- 2 **Capstone Projects: Combining Critical Thinking and Creativity.** K. SOLURI.
- 3 **NCSE's Scientist in A Classroom Program: Using Primatology to Teach Middle Schoolers about Climate Change and Evolution.** L.J. VOLKERS, M. VERGAMINI, A.L. RECTOR.
- 4 **Managing an undergraduate research lab at a teaching-focused university.** L. KAUFFMAN.
- 5 **Community Outreach: Engaging the Public While Hosting a World Lemur Festival Event at Salt Lake Community College.** M.S. SCHAEFER.
- 6 **Anthropology and Experiential Learning on a Study Abroad in South Africa.** L.M. DAY, J.L. HARRYMAN, B. JACOBY, J. JONES, C.A. MCGRATH, K.D. O'NEILL, S.M. PHILBEN, M. VERGAMINI, L.J. VOLKERS, A.L. RECTOR.
- 7 **Cradle Ambassadors: Public Palaeoanthropology in the Tourism Space.** K. HUNTER.
- 8 **Anthropology outreach initiatives: How to get involved in the local community as a graduate student.** M. HERNANDEZ, T. LASISI, C. MCGUIRE, E. KATE, G. BUCKLEY.
- 9 **Teaching race and gender as bioculturally relevant, not genetic proxies of human difference.** A.R. HUBBARD.
- 10 **Día de Salud: A model for community-based outreach to improve health care access for low-income families.** A.C. DONA, G. EICK, A. HUYNH, J. SNODGRASS.
- 11 **Working with Low Income Students: Ideas and concepts to create a more inclusive classroom.** B. SMITH, C. PACE, M. KISSEL, K. RUSSO.
- 12 **Team-based learning in an introductory bio anth course (or, why I will never go back to just lecturing!).** J.L. WESTIN.
- 13 **"Active learning" in the anthropology classroom improves student engagement, retention, and inclusion.** T. KEETON, A.R. HUBBARD.
- 14 **Caves in the Classroom: Explore Hominid Fossils with Virtual Reality in DinalediVR.** B. PEIXOTTO, A. MONTGOMERY, D. GARCIA MARTINEZ, N. HLOPHE, M. OCHOA, M. RAMALEPA, M. TSIKOANE, S.J. TUCKER, J. MEAD, M. ELLIOTT, L.R. BERGER.
- 15 **Science and Anthropology in Underrepresented Spaces: Discovery Program and Full STEAM Ahead.** S.M. PHILBEN, K.D. O'NEILL, M. VERGAMINI, C.M. CARTOZZO, J. JONES, A.L. RECTOR.
- 16 **Opening Adult Learners Up to New Ideas Using Museum Experiences.** N.M. BURT.
- 17 **Using R stats to teach about hominins and adorable primates.** K.A. WARREN, M. KISSEL.
- 18 **Creating opportunities for K-12 outreach with undergraduate mentors.** D.M. MULHERN, N.C. NEFF, H. BROOKSHIER, M. WILSON.



**19 Science Engagement with Religious Institutions and Publics.** R.C. O'MALLEY, E. CROCKER.

Session Recent Advancements in the Analysis of Bone Microstructure  
22:

*Invited Poster Symposium.* Chair: Janna M. Andronowski.

Co-organizers: Andronowski, Janna M. University of Akron; Maggiano, Isabel. University of West Georgia; Maggiano, Corey. University of West Georgia..

**CC Room 23.**

**Recent Advancements in the Analysis of Bone Microstructure: Abstract** The investigation of human hard tissues allows us to address a wide range of anthropologically relevant questions about ourselves, past and present, due to their resilience after death and ability to record important aspects of our biological, cultural, and environmental contexts. This symposium focuses on the study of bone histomorphology through innovations in method and theory that further our understandings of bone microstructure and what it can say about human life. Research expertise spans multiple forms of advanced microscopy, imaging, staining techniques, and chemical analyses that push our studies toward the third and fourth dimensions, analyzing bone structure and chemistry, spatially and temporally. The represented work uses comparative, experimental, and discovery-based approaches to provide results illuminating bone growth, physical adaptation, and health for applications across bioarchaeology, anatomy, forensics, and paleontology. This interdisciplinary approach will allow us to delve deeper into bone microarchitectural variation and what it means for understanding human life.

**Discussant: David Cooper.**

- 1 Image processing techniques for extracting complex three-dimensional cortical pore networks from high-resolution micro-computed tomography (micro-CT) images of the human femoral neck and rib.** M.E. COLE, S.D. STOUT, A.M. AGNEW.
- 2 The utility of geographic information systems (GIS) software for the spatial analysis of bone microstructure.** T.P. GOCHA.
- 3 Morphological characteristics of inter-osteonal transverse connections in human Haversian tissue.** I.S. MAGGIANO, C.M. MAGGIANO, D.M. COOPER.
- 4 Application of Synchrotron micro-Computed Tomography and Confocal Laser Scanning Microscopy to evaluate sex-related differences in the human osteocyte lacunar-canalicular network across the lifespan.** J.M. ANDRONOWSKI, R.A. DAVIS, G. TUBO, D.M. COOPER.
- 5 Animal models as a platform to probe the spatio-temporal coordination of cortical remodeling and its functional significance.** D.M. COOPER, K. HARRISON, B. HIEBERT, J. ANDRONOWSKI.

- 6 **A population perspective on the co-localization of trace elements in archaeological bone.** T.M. SWANSTON, T.L. VARNEY, I. COULTHARD, R. MURPHY, R. SIMPSON, D.M. COOPER.
- 7 **Skeletal microstructure growth dynamics in ancient humans and fossil rats from Indonesian islands.** J.J. MISZKIEWICZ, P. MAHONEY, J. LOUYS, S. O'CONNOR, C. MORGAN, B. WYATT, P. BELLWOOD.
- 8 **Microscopic markers of an infradian biorhythm in human juvenile ribs.** R. PITFIELD, J.J. MISZKIEWICZ, P. MAHONEY.
- 9 **The Use of Raman Spectroscopy to Examine Bone Composition in Infant Ribs.** M.E. SOTO MARTINEZ, C.M. CROWDER, X. BI.
- 10 **Optical staining of bone mineral in human osteons reveals a fiber texture of mineral grains.** S. GOMEZ, B. HU, T. BROMAGE.
- 11 **Use of Special Stains to Narrow Etiology in the Histopaleopathology of Anemia.** L. WATAMANIUK.
- 12 **The Use of Laser Scanning Confocal Microscopy in Detecting Bone Microstructure Using Basic Fuchsin and Toluidine Blue Stains.** A.C. SMITH.
- 13 **Semi-quantitative BSE-SEM evaluation of osteocyte and vascular porosity across complete bone cross section.** B. HU.

Session Homo heidelbergensis: What's in a name or rather, who actually belongs?  
23:

*Invited Poster Symposium.* Chair: Mirjana Roksandic.

Co-organizers: Bae, Christopher (Department of Anthropology, 2424 Maile Way 346 Saunders Hall, University of Hawai'i at Manoa, Honolulu HI, 96822 USA).

#### **CC Room 24.**

Despite attempts to properly define *Homo heidelbergensis*, there is no consensus on what this taxon represents, beyond the general agreement that they are Middle Pleistocene hominins not easily assigned to *H. erectus* or to modern *H. sapiens*. Opinions on how to define and interpret *H. heidelbergensis* range from calls to limit it to Neanderthal ancestry or to limit it to non-Neanderthal ancestry, to either reserve the term for European Middle Pleistocene specimens or to include the specimens from Africa or possibly even the entire Old World. Some have even argued to abandon the use of this taxonomic name altogether. Recent years have seen substantial challenges to the views that dominated paleoanthropology for the last three decades, most prominently in what concerns the Middle Pleistocene hominins. Non-invasive studies of hidden morphological structures, advances in radiometric dating and last but not least, important strides in ancient DNA research have contributed to challenging what has become an orthodox view of modern humans emerging from a single African source and replacing all other "species" across the Old world. From recognition of Denisovans as a new group of MP hominins, acceptance that Neanderthals did interact and mate with modern humans on a regular basis, the evidence of introgression of genes into the Neanderthal genome and the increasingly

common recognition of the persistence of morphologically distinct regional populations (*H. naledi*, *H. floresiensis*) have played an important role in this change. *Homo heidelbergensis* is still an important taxon in this debate and we need to examine its validity and the range of its hypodigm in an open discussion among researchers who hold varying positions. We are currently preparing to submit a proposal to publish these proceedings in *Journal of Human Evolution* (JHE) given that the theme of this symposium aligns closely with one of JHE's major themes.

**Discussant: Leslie Aiello.**

- 1 ***Homo heidelbergensis*: what do we need to set the question of the validity of this taxon to rest.** M. ROKSANDIC, C. BAE.
- 2 **The Late Middle Pleistocene fossils from Montmaurin (Haute-Garonne, France). A contribution to the question of the emergence of the Neandertal lineage.** A. VIALET, M. MARTINEZ DE PINILLOS, J. BERMUDEZ DE CASTRO, M. MARTINON-TORRES, B. BERTRAND, T. COLLARD.
- 3 **The Neanderthals before the Neanderthals: The Levantine scenario.** I. HERSHKOVITZ.
- 4 **Was *Homo heidelbergensis* in Africa?** A. MOUNIER, M. MIRAZÓN LAHR.
- 5 **Middle Pleistocene human fossils found in China: isolated evolution or influenced by migration?** X. WU, W. LIU.
- 6 **Assessing the status of *Homo heidelbergensis* through dental morphology and ancestral state reconstruction approaches.** A. GOMEZ-ROBLES.
- 7 **Hohlenstein-Stadel mitochondrial DNA and the "Middle Pleistocene Out of Africa Model".** C. POSTH, J. KRAUSE.
- 8 **Middle Pleistocene hominin systematics: *Homo heidelbergensis*, *Homo sapiens*, and the species concept revisited.** S.G. ATHREYA.
- 9 **Classifying the Middle Pleistocene hominins: Testing taxonomic hypotheses using supraorbital morphology.** S. WHITE, C. SOLIGO, M. POPE, S. HILLSON.

## Friday, All day sessions.

Session Dental Anthropology: Variation, Disease and Diet  
24:

***Contributed Poster Presentations.*** Chair: Daniel Ehrlich.

**CC Ballroom BC.**

8:00 **Poster Setup.**

1:30 **Even number poster presenters stand by their posters.**

5:30 **Odd number poster presenters stand by their posters.**

- 1 **Interobserver Agreement in Scoring Dental Morphology using ASUDAS in South Australian Whites.** S. HAY, L.E. CIRILLO, T. VLEMINCQ-MENDIETA, D. KENESSEY, R.L. PERASH, S.J. COLE, K.A. BROEHL, G. SCOTT.

- 2 **Closing the gap: Examining sex differences in oral health.** G. ERRICO, G. HUNT, D. HUNT.
- 3 **Discriminant function analysis of cervical diameters of permanent teeth to estimate sex of subadult skeletal remains.** M.K. GRIFFITH, S. HILLSON.
- 4 **Exploring Sex- and Age-Based Variations in Diet in Ancient Greek Sicily Using Dental Microwear Analysis.** A. JOHNSON, L.J. REITSEMA, A.K. SMITH, S. VASSALLO, B. KYLE.
- 5 **Testing the Effectiveness of Permanent Canine Tooth Metrics for Sex Estimation in a Medieval Prussian Sample.** A. GRUENTHAL-RANKIN, K. GADDIS, A. KOPERKIEWICZ, M. POLCYN, M. RAMSIER.
- 6 **Life history parameters recorded in dental cementum.** P. CERRITO, S.E. BAILEY, B. HU, T.G. BROMAGE.
- 7 **Dental microwear texture analysis as a tool for discerning intra-population dietary patterns: Evidence from the Croatian Copper Age site of Potočani.** J.L. DROKE, J.C. AHERN, I. JANKOVIĆ, M. NOVAK, J. BALEN, H. POTREBICA, C.W. SCHMIDT.
- 8 **Dental Microwear Texture Analysis of Archaic Period Groups in Indiana and Kentucky.** E. EDWARDS, A. MCDANIEL, C. SCHMIDT, C. MOORE.
- 9 **Dental microwear analysis of the ancient population from Jiayi Cemetery, Northwestern China.** W. ZHANG, H. CUI, P. LI, J. LI.
- 10 **The impact of environmental grit on dental wear at Tell el-Amarna, Egypt: Investigating the windblown sand theory.** E.L. MOREY.
- 11 **Diet and Catastrophe: Dental Microwear Analysis of a Population Under Siege at the Ancient Greek Colony of Himera.** E.C. FLEMING, L.J. REITSEMA, K.L. REINBERGER, S. VASSALLO, B. KYLE.
- 12 **Eating in or dining out: a multiscale (local to global) examination of stable carbon and nitrogen isotope ratios from the Roman period (AD 200-400) community at Oymağaç, Turkey.** K.E. MARKLEIN.
- 13 **Diet in the northern highlands of Ecuador during the Formative Period (3500 – 500 BC): Insights from bone collagen stable carbon and nitrogen isotope analysis.** P. TORRES PEÑA, S. GARVIE-LOK.
- 14 **Micro-sampling tooth dentine for stable carbon and nitrogen isotope analysis: early life dietary analysis of prehistoric hunter-gatherers around Lake Baikal, Siberia.** V.M. VAN DER HAAS, O.I. GORIUNOVA, V.I. BAZALIISKII, A.W. WEBER.
- 15 **Got fish? Diet and dental health of the Late Intermediate (ca. 1000-1450 CE) peoples in the Atacama Desert, northern Chile.** M.P. ALFONSO-DURRUTY, E.M. GAYÓ, V.G. STANDEN, V. CASTRO, C. LATORRE, C. SANTORO, D. VALENZUELA.
- 16 **Decontaminating Dental Calculus for Ancient Starch Research.** S. CLARKE, M. SOTO, J. INWOOD, J. MERCADER.

- 17 **Assessing striae of Retzius periodicity nondestructively using perikymata counts and distribution in two new populations.** B.J. BETZ, M.C. O'HARA, L. OLDERSHAW.
- 18 **Late Neolithic children of Belgium: A comparison of deciduous molar morphology from four caves burials.** F.L. WILLIAMS, R.L. GEORGE.
- 19 **To be or not to be MZ or DZ: Diagnosing zygoty in South Australian white twins from nonmetric crown traits.** S.J. COLE, K.A. BROEHL, L.E. CIRILLO, S. HAY, D. KENESSEY, R.L. PERASH, T. VLEMINCQ-MENDIETA, G. SCOTT.
- 20 **Transmigration of impacted mandibular canines in ancient Nubia.** A.J. PTACEK, B.J. BAKER, K.L. BOLHOFNER.
- 21 **Raising the Roof: Assessing Global Frequencies of Palatine Torus.** R.L. PERASH, S.J. COLE, G. SCOTT.
- 22 **An Intra-site Biodistance Analysis of the Maya: Dental Evidence for Urbanism at Copan.** K. MILLER WOLF.
- 23 **Biological Distance and Burial Practice: An Investigation of the Perry site (1LU25).** A.N. STEWART.
- 24 **Presence of Lingual Cuspule and paraconid on one Archaic period individual from the Ohio Valley.** E.C. BLANKENSHIP-SEFCZEK.
- 25 **A Re-Evaluation of the Sinodont and Sundadont Dental Complexes for the Peopling of the Japanese Archipelago.** S.A. KLAINER, G.R. SCOTT.
- 26 **Hyksos in Egypt – utilising biodistance methods to interpret archaeological and textual evidence from Tell el-Dab'a.** N. MAARANEN, S.R. ZAKRZEWSKI, H. SCHUTKOWSKI.
- 27 **Identity and Dental Modification in Prehispanic Ecuador.** S.L. JUENGST.
- 28 **Pulling teeth: Dental avulsion at Kulubnarti, Sudan, in regional context.** K.L. BOLHOFNER, B.J. BAKER.
- 30 **The Embodiment of Gendered Weaning Stress in the Dental Structures of Archaic Texas Hunter-Gatherers: An Analysis of Age-at-Formation of Linear Enamel Hypoplasia.** C.L. ZNACHKO, L.G. KOUTLIAS.
- 31 **Investigating patterns of growth disturbances in a Neolithic sample from Liguria (northwestern Italy, 4800-4400 BCE) from the analysis of enamel defects and diet.** I. DORI, E. ORELLANA GONZÁLEZ, G. GOUDE, A. VARALLI, J. MOGGI-CECCHI, V.S. SPARACELLO.
- 32 **Unexcused abscesses: the unexpected demographics of dental abscesses at Ancón, Peru.** C. MONESMITH, B. GREEN, S.R. WILLIAMS.
- 33 **Childhood growth and diet: insights from analysis of deciduous teeth from the Tooth Fairy collection (France).** M. LE LUYER, M. BAS, P. MAHONEY, P. BAYLE.
- 34 **Health inequality as seen in human skeletal remains in early modern period in Japan.** H. TOMITA, N. SEGUCHI, N. SEGUCHI.

- 35 **Population history of southern Italy during Greek colonization inferred from dental remains.** H. RATHMANN, B. KYLE, K. HARVATI, R. POSAMENTIR, G. SALTINI SEMERARI.
- 36 **DMTA of Muchik sacrifice victims from Cerro Cerillos.** M.R. HOFFMAN, M.C. VERMILLION, C.W. SCHMIDT, H.D. KLAUS.
- 37 **Dental Pathology and Dietary Intake of Inner Asian Steppe Inhabitants during the Historic Mongol Period- Yuan Dynasty (ca. CE 1200-1400).** M. MACHICEK, J.T. ENG.
- 38 **Life History Perspectives on Carious Lesion Formation.** K. KUBEHL, D.H. TEMPLE.
- 39 **Famine and Tooth Decay: Assessing the Relationship between Famine and Caries Frequencies.** A.K. KINDLER, B.S. WALTER.
- 40 **Corn, Culture, and Caries: A Temporal Study of Carious Lesions on the Mississippian Periphery.** E.M. LAGAN, R.A. COOK, M. HUBBE.
- 41 **A Study of Remains of Human Beings Excavated in the Graveyard of Xiabandi.** Y. WANG.
- 42 **Preliminary analysis of dental pathologies frequencies among individuals at Los Indios archaeological site (AD 600-1200) Santa Isabel, Puerto Rico: considering oral health during the Late Ceramic Age (AD 600-1500).** A. BELTRAN-BURGOS.
- 43 **Dental Disease in an Egyptian Colonial Cemetery at Tombos.** M.J. FURTNER, M.R. BUZON.

Session Human Biology  
25:

*Contributed Poster Presentations.* Chair: Melissa Liebert.

**CC Ballroom BC.**

- 1 **Ecological predictors of allomaternal care across human societies.** J.S. MARTIN, E.J. RINGEN, A.V. JAEGGI.
- 2 **Household exposure to allomaternal care improves early cognitive outcomes in older female infants.** B. SINGLETARY.
- 3 **Impact of socioeconomic status on breastfeeding initiation and duration.** E.E. TYLER, L.M. SCHELL.
- 4 **An evolutionary model for the origins of temporal discounting in humans and non-human animals.** B.A. VILLMOARE, D. KLEIN, P. LIENARD, T. MCHALE.
- 5 **The role of the precuneus in accurate long-range projectile throwing: a transcranial magnetic stimulation study.** J.K. RILLING, L. RICHEY, D. GRAF, M. LEE, C. EPSTEIN.
- 6 **An ethological investigation of the evolutionary causes and consequences of fasting in humans.** C.D. PLACEK.
- 7 **Presence of Xenoestrogens in the Hunter-Gatherer Diet of Mbendjele BaYaka from Republic of Congo.** M.D. WASSERMAN, I. THOMPSON, E. CHESTER, K. JANMAAT.

- 8 **Geophagy in The Gambia: An exploration of the motivators for eating earth among men and women.** J.D. CRAMER, M. JALLOW, J.D. MILLER, S.L. YOUNG.
- 9 **Sedentism and Dietary Variation among the semi-nomadic Naduhup of the Northwest Amazon.** H.M. WRIGHT, MS, G.H. SHEPARD, JR., PHD, B.A. PIPERATA, PHD.
- 10 **When did families in *Kodinhi (Kerala State, India)* start having unprecedented numbers of twins? Preliminary results .** R. RAKER, S. RIFAIE, A. SHENOY, S. EWING, E. BARAGAR, G. SAVARIMUTHU, J. FRANCIS, R. BLAIR, L. MADRIGAL.
- 11 **Ancestral climatic histories and their influence on interindividual variation in cold-induced vasodilation responses.** K.A. WEST, B. FLOYD.
- 12 **The interaction of climatic and energetic factors on human nasal morphology.** A.P. KELLY, S.D. MADDUX.
- 13 **Selection for lifetime reproductive success among ethnic Tibetans residing at high altitude in Nepal.** C. JEONG, D.B. WITONSKY, B. BASNYAT, M. NEUPANE, C.M. BEALL, G. CHILDS, S.R. CRAIG, J. NOVEMBRE, A. DI RIENZO.
- 14 **A Method for Identifying Cold-Induced Activation of Brown Adipose Tissue.** V.M. BATTISTA, J. TORPY.
- 15 **Are we what we eat? Regional diet, but not climate, shapes cranial morphology in Jomon foragers.** L.T. BUCK, I. DE GROOTE, Y. HAMADA, J.T. STOCK.
- 16 **Impact of the 1854 cholera epidemic at the Erie County Poorhouse, Buffalo, New York.** R.L. HIGGINS, J.E. SIRIANNI.
- 17 **Dental Health At the Cusp of the Third Epidemiological Transition.** L.R. WILLIAMS, A. LANS, S. DUFFY.
- 18 **The Aftermath and Effects of Zika Virus on Human Growth and Development.** A.A. CHUGHTAI.
- 19 **The Effects of the Missouri and Mississippi Rivers in the Epidemiological Spread of the 1918 Influenza Epidemic.** S.A. CLARK, C.M. ORBANN.
- 20 **Selective mortality of tuberculosis after the 1918 influenza pandemic in two Newfoundland regions.** T. PASKOFF.
- 21 **Comparison of two Alaskan cultural groups during the 1918-19 influenza pandemic using social network modeling.** M. MURRAY, L. SATTENSPIEL.
- 22 **The Effects of Soundscape on the Prairie Madness Phenomenon.** A.D. VELEZ, M. CONDE-VALVERDE, J. MARCHAMALO-AMADO, A.E. AHONEN.
- 23 **Allostatic load predicts chronic disease in New Mexicans of Spanish-speaking descent.** C. MOSLEY, M. HEALY, K. RUSK, K. HUNLEY, H. EDGAR.
- 24 **Investigating symptoms of depression in African Americans by integrating genetic and sociocultural data.** K.C. FULLER, C. MCCARTY, C.C. GRAVLEE, C.J. MULLIGAN.
- 25 **The embodiment of social experience: How social support and workplace incivility vary with health indicators in female scientists of color.** M.A.

- RODRIGUES, R. NEUBAUER, D. HERRERA, R. MENDENHALL, E.A. STINE-MORROW, K.B. CLANCY.
- 26 **Menstrual cycle variability in rural Bangladeshi women.** B. BASU, D.J. HOLMAN, A. PAN, T.T. NGUYEN.
  - 27 **Men's secretory immunoglobulin-A, testosterone, and cortisol are significantly associated within a single day and across two sequential days.** G. ALBERT, N. LANDRY, T.L. ORTIZ, J.M. CARRÉ, S.A. ARNOCKY, C.R. HODGES-SIMEON.
  - 28 **The Effect of Polycystic Ovarian Syndrome (PCOS) on Bone Mineral Density.** S. BRUCKLER, M. MOORE.
  - 29 **A Closer Look at Global Prevalence of Obstetric Fistula.** L.R. LANG, C. KNOTT.
  - 30 **How conflicting messages during pregnancy affect U.S. women's self-reported and biological stress levels.** G.T. RITCHIE-EWING, B.A. PIPERATA.
  - 31 **Climate Change and Invisible Suffering: Transgenerational Impacts of Traumatic Maternal Experiences of Extreme Drought.** B. STRAIGHT, C.E. HILTON, G. ONICESCU, B. NEEDHAM, A. NAUGLE, O.C. OWUOR, Y. SHEN, S.M. HAFT, S. LESEELA, D.L. LESEELA, C. JESKA, C. KELEMPU.
  - 32 **Maternal stress, anxiety, and fear of childbirth among planned homebirth mothers: results from a mixed methods study.** N.L. FALK-SMITH, L. MADRIGAL, L. MADRIGAL.
  - 33 **Media interpretations of "Palaeo-diets" for pregnant women, babies, and toddlers: Relationships to anthropological evidence and public health guidelines.** L.J. MCKERRACHER, T. MOFFAT, M.E. BARKER, D.M. SLOBODA.
  - 34 **Exploring the Effect of Socioeconomic Factors on Body Size and Health in the United States from 2000-2018.** E.Y. CHU, B.T. NEW.
  - 35 **Secular trends in cardiovascular and metabolic health among the Indigenous Shuar of Amazonian Ecuador.** A.M. TREADWAY, M.A. LIEBERT, F.C. MADIMENOS, S.S. URLACHER, T.J. CEPON-ROBINS, T.E. GILDNER, J.M. SCHROCK, C.J. HARRINGTON, D. AMIR, A.D. BLACKWELL, R.G. BRIBIESCAS, J.J. SNODGRASS, L.S. SUGIYAMA.
  - 36 **Metabolic syndrome in urban young adults from Merida, Mexico.** S. DATTA BANIK, A. NUDEL ONTIVEROS, R. MÉNDEZ GONZÁLEZ.
  - 37 **The Global History of Health Project - Asia Module.** Q. WANG, Q. ZHANG.
  - 38 **Testing least cost path (LCP) models for travel time and kilocalorie expenditure: implications for landscape genomics.** K.M. GOWEN, T.S. DE SMET, R.M. GARRUTO, J.K. LUM.
  - 39 **Human Walking Behavior.** A. BONNER-HARRIS, C. WALL-SCHEFFLER.
  - 40 **Daily Lives of Samburu Pastoralist Children: Work, herding, and food consumption.** D. ALLEN, C.E. HILTON, B. STRAIGHT.
  - 41 **Coping strategies of maternal and infant feeding practices after a natural disaster among Zapotec peoples in Oaxaca, Mexico.** N. PAREDES RUVALCABA.
  - 42 **Integration of growth in head circumference, body length, and body weight in rural Gambian infants during the first year of life.** R.M. BERNSTEIN, Z.



STANLEY, N. AFFARA, D.B. DUNGER, K.K. ONG, A.M. PRENTICE, S.E. MOORE.

- 43 **Quantifying growth faltering across the first year of life in rural Gambian infants.** D.J. NAUMENKO, J. DYKES, G. O'CONNOR, Z. STANLEY, N. AFFARA, D.B. DUNGER, K.K. ONG, A.M. PRENTICE, S.E. MOORE, R.M. BERNSTEIN.
- 44 **The infancy-childhood transition in rural Gambian infants.** G. O'CONNOR, Z. STANLEY, J. DYKES, D.J. NAUMENKO, N. AFFARA, D.B. DUNGER, K.K. ONG, A.M. PRENTICE, S.E. MOORE, R.M. BERNSTEIN.
- 45 **Quantifying growth pulses across the first year of life in rural Gambian infants.** J. DYKES, J.A. CUMMINGS, D.J. NAUMENKO, G. O'CONNOR, Z. STANLEY, N. AFFARA, D.B. DUNGER, K.K. ONG, A.M. PRENTICE, S.E. MOORE, R.M. BERNSTEIN.
- 46 **Influence of sex, season of birth, and gestational age at delivery on growth in rural Gambian infants from birth to one year.** Z. STANLEY, J. DYKES, D.J. NAUMENKO, G. O'CONNOR, N. AFFARA, D.B. DUNGER, K.K. ONG, A.M. PRENTICE, S.E. MOORE, R.M. BERNSTEIN.
- 47 **Breastfeeding and complementary feeding patterns in a rural Gambian population.** J. WASHABAUGH, S.E. MOORE, N. AFFARA, D.B. DUNGER, K.K. ONG, A.M. PRENTICE, R.M. BERNSTEIN.
- 48 **A cautionary theory: Learning from the origins of allometric scaling.** A.B. BRUMMER, J.D. MONK, A.B. RODDY.

Session Primate Reproductive Ecology  
26:

*Contributed Poster Presentations.* Chair: Cheryl Knott.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

5:30 **Odd number presenters stand by their posters.**

- 1 **Sex Differences in Orangutan Long Bone Skeletal Strength in Relation to Flanging Status.** A.E. KRALICK.
- 2 **Exploring adaptive functions of geophagy across non-human primates: Considering the role of sexual selection.** B.N. MYERS, C.D. PLACEK.
- 3 **Timing of reproductive onset among female vervet monkeys (*Chlorocebus pygerythrus*) in wild and human-impacted populations.** S.R. PARKE, A.M. RICH, M.B. BLASZCZYK, C.A. SCHMITT.
- 4 **Maternal position within the dominance hierarchy in *Macaca mulatta*: Associations with offspring 2D:4D ratio and growth.** J. ARROYO, L. MADRIGAL, R. LONES-KHALFOUNI, M. LEBRÓN, M. MARTÍNEZ, C. ESCABÍ.
- 5 **Tainted love: Why do female olive baboons dart after copulations?** J.T. WALZ, D.M. KITCHEN.

- 6 **Social influences on reproductive development and maturation in female geladas.** J.A. FEDER, J.C. BEEHNER, A. LU.
- 7 **Effect of Reproduction on Javan Slow Loris Mother's Activity Budget and Ranging Behavior.** A. WELDON, S. POINDEXTER, M. CAMPERA, M.A. IMRON, K. NEKARIS.
- 8 **Gestation length in African and Asian colobines.** C. BORRIES, C.S. MONGLE, A. KOENIG.
- 9 **The reproductive ecology of the Kinda baboon: female synchrony and male reproductive skew.** M. PETERSDORF, J.P. HIGHAM, A.H. WEYHER.

Session Human Skeletal Biology: Variation and Variability

27:

*Contributed Poster Presentations.* Chair: Waxenbaum, Erin.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

5:30 **Odd number presenters stand by their posters.**

- 1 **Pelvic sexual dimorphism: The relationship between sacral slope, body mass, and greater sciatic notch shape.** S.M. ZALESKI.
- 2 **A natural history of the femoral neck.** A.G. CLAXTON.
- 3 **The Urban Environment of a Neighborhood in Teotihuacan, Mexico.** R. STOREY, G.M. BUCKLEY.
- 4 **Variation in Sexual Dimorphism Due to Climatic Stress.** M.E. FEILER, E.B. WAXENBAUM.
- 5 **Ontogenetic processes in the nasal cavity among Alaskan Inuits: Implications for respiratory adaptations in cold-dry environments.** L.N. BUTARIC, S.D. MADDUX, C.L. NICHOLAS, A. EVTEEV.
- 6 **Talar forces and moments in turning.** S.G. LAUTZENHEISER, A.D. SYLVESTER, P.A. KRAMER.
- 7 **Measuring enthesal morphology of the opponens pollicis muscle in digital and physical specimens of *Homo sapiens*.** L.A. BOWLAND, M.W. TOCHERI, C.M. ORR.
- 8 **Geometric morphometric assessment of skull symmetry in 6-8.0 year old humans.** J.M. CRONIN, A.M. SHAUGHNESSY, J. VANNAHEUANG, L.E. CIRILLO, G.D. RICHARDS, R.S. JABBOUR.
- 9 **Ontogeny of human cranial vault microstructure.** D. LOMBARDO, H. COQUEUGNIOT, T. COLARD.
- 10 **Investigating covariation between cranial vault thickness and brain size.** H.E. MARSH.
- 11 **Relationship between chondrocranial-derived components of the nasal complex and cranial base.** T.R. YOKLEY, B. JACOBSON, J.E. SCOTT, N.E. HOLTON.

- 12 **Middle meningeal arteriovenous and dural sinus variation in 6-8.0 year old humans.** I.B. REICH, P.S. SIMONE, C.M. CONNOR, C. LEE, T.W. SHIEN, R.S. JABBOUR, G.D. RICHARDS.
- 13 **3D geometric morphometric analyses of the human torso morphology reveal new understandings about the torso integration in primates.** N. TORRES-TAMAYO, D. GARCÍA-MARTÍNEZ, S. NALLA, A. BARASH, S.A. WILLIAMS, E. BLANCO-PÉREZ, F. MATA-ESCOLANO, J. SANCHIS-GIMENO, M. BASTIR.
- 14 **To Correct for Size or Not: Examining the Problem Using the Pelvis.** H. DELPRETE.
- 15 **An automated tool for measuring human limb bones using 2D images.** A.B. LEE, P. LI, D.W. HOIEM.
- 16 **Patterns of Skeletal Asymmetry in the Human Pelvis.** A. ERIKSEN, N. VON CRAMON-TAUBADEL.
- 17 **Morphological integration and modularity in the humerus of modern humans.** M.F. BRASIL.
- 18 **Length variation in the upper limbs and hands of modern Thai skeletons.** D.T. CASE, K.R. SAVELL.
- 19 **Sacroiliac joint fusion in nulliparous and parous females and males.** M.N. AULDS.

Session Non-human Primate Evolution  
28:

*Contributed Poster Presentations.* Chair: Kieran McNulty.

**CC Ballroom BC.**

8:00 **Poster Setup.**

1:30 **Even numbered presenters stand by their posters.**

5:30 **Odd numbered presenters stand by their posters.**

- 1 **New ages for old primates: a revised geochronology for the highly endemic late Uintan and early Duchesnean assemblages from the Devil's Graveyard Formation of West Texas.** C.J. CAMPISANO, A.L. DEINO, C.J. LEPRE, E. KIRK.
- 2 **Phylogenetic Affinities of Sivaladapidae within Adapoidea.** K. RUST.
- 3 **Olfactory system anatomy in *Homunculus* and the ecological importance of olfactory cues among stem platyrrhines.** I.K. LUNDEEN, R.F. KAY.
- 4 **Morphometric affinities of a new fossil ulna from Buluk, Kenya.** A.C. NISHIMURA, G.A. RUSSO, I. NENGO, E.R. MILLER.
- 5 **Moving through time: Intermediate phalanges from East African early and middle Miocene catarrhines reveal locomotor changes.** I.D. ARNEY, M. MCCROSSIN, B. BENEFIT, I. NENGO.
- 6 **A Phylogenetic Analysis of European Pliopithecoids.** A.C. HOLMES, D.R. BEGUN.
- 7 **The *Oreopithecus bambolii* (IGF 11778) lumbar region: Revised anatomy.** A.S. HAMMOND, L. ROOK, S. MOYÀ-SOLÀ, S. ALMÉCIJA.

- 8 **Lower molar endostructure in *Rudapithecus hungaricus* (late Miocene, Hungary).** C. ZANOLLI, D.R. BEGUN, J. KELLEY.
- 9 **Mandibular third premolar root morphology in *Rudapithecus hungaricus* and its implications for diet.** R.M. MARTIN, A. LE CABEC, D.R. BEGUN, K. KUPCZIK.
- 10 **A deformation-based geometric morphometric analysis of the vestibular apparatus in the Miocene apes *Hispanopithecus laietanus* and *Rudapithecus hungaricus*.** A. URCIUOLI, C. ZANOLLI, D. BEGUN, S. ALMÉCIJA, J. DUMONCEL, S. MOYÀ-SOLÀ, D.M. ALBA.
- 11 **Taxonomic variation in the large catarrhines from Rusinga and Mfangano Islands.** K.P. MCNULTY.
- 12 **Insights into the paleobiology of early Colobinae: new views from the Late Miocene of Central Africa, Chad.** L.T. PALLAS, H.T. MACKAYE, A. LIKIUS, P. VIGNAUD, F. GUY, G. DAVER.
- 13 **The oldest, most complete skeleton of *Theropithecus*, ARI-VP-1/26 from Woranso-Mille, Afar, Ethiopia.** S.R. FROST, N.G. JABLONSKI, Y. HAILE-SELASSIE.
- 14 **New macaque remains from the Middle Pleistocene of Gruta da Aroeira, Portugal.** D.M. ALBA, J. DAURA, M. SANZ, E. SANTOS, A.S. YAGÜE, E. DELSON, J. ZILHÃO.
- 15 **Palaeoproteomic analysis of Early Pleistocene *Gigantopithecus blacki*.** F. WELKER, J. RAMOS-MADRIGAL, W. WANG, M. KUHLWILM, M. DE MANUEL MONTERO, F. DEMETER, C. LALUEZA-FOX, T. MARQUES-BONET, J.V. OLSEN, E. CAPPELLINI.
- 16 **Night and day: Subfossil faunal representation in neighboring Malagasy caves illustrates interaction and exclusion by predator and prey.** L.R. GODFREY, Z.S. KLUKKERT, M.E. LEWIS, N.J. RAHANTAHARIVAO, L. RANIVO HARIMANANA, P. FAINA, N. SCROXTON, S.J. BURNS.
- 17 **Resolving the taxonomic status of *Cercopithecus dryas* Schwarz 1932 and *C. salongo* Thys van den Audenaerde 1977.** C.C. GILBERT, E.J. SARGIS, E. GILISSEN, J.L. ARENSON, B.A. PATEL, M. NAKATSUKASA, K.M. DETWILER, T.B. HART, J.A. HART.
- 18 **Trophic shifts, diversification, and the adaptive origins of crown primates.** J.E. SCOTT.
- 19 **The evolution of body size in Strepsirrhine primates.** A. PENNA, L. POZZI.
- 20 **Identification of Extant Cercopithecoid Isolated Molars using 3D GM.** E.J. MAZELIS.
- 21 **Predicting skull shape from admixture history in a multigenerational macaque cross sample.** D.C. KATZ, L.T. BUCK, J. DEVINE, R.R. ACKERMANN, B. HALLGRIMSSON, L.J. HLUSKO, S. KANTHASWAMY, T.D. WEAVER.

Session 29: Functional Morphology, Biomechanics and Evolutionary Anatomy

*Contributed Poster Presentations.* Chair: Maja Seselj.

**CC Ballroom BC.**

**8:00 Poster Setup.**

**1:30 Even number presenters stand by their posters.**

**5:30 Odd number presenters stand by their posters.**

- 1 Capturing 3D locomotor kinematics of modern humans to determine behavioral substrate navigation.** A.L. WISEMAN, T. O'BRIEN, I.E. DE GROOTE.
- 2 Muscle myosin heavy chain content and the evolution of hominin walking costs.** M.C. O'NEILL, B.R. UMBERGER.
- 3 Tibial torsion and patterns of metatarsal robusticity in humans: an osteometric study.** M.A. SCHRANK, J.S. WOLLMANN, A.S. MARSHALL, L.T. GRUSS.
- 4 Tibial torsion and pressures in the feet during walking and standing in humans: an experimental study.** J.S. WOLLMANN, A.S. MARSHALL, M.A. SCHRANK, L.T. GRUSS.
- 5 Covariation across the thoracolumbar vertebral column in hominoids.** E.R. MIDDLETON.
- 6 Humans have relatively larger lumbar vertebrae than African apes.** N. KORPINEN, M. NISKANEN, J. JUNNO, T. VÄRE.
- 7 Stature estimation as allometry.** L.W. KONIGSBERG, S.R. FRANKENBERG.
- 8 Applying BayesModelS to body mass prediction; comparisons with traditional approaches and recommendations for future paleontological reconstructions.** J.D. PAMPUSH, G.S. YAPUNCICH, E.J. FUSELIER.
- 9 Obstetric constraints in large-brained cebids and modern humans: a comparison of coping mechanisms.** N.M. LAUDICINA, M. CARTMILL.
- 10 Evolutionary changes in neurocranial structure do not correlate with cortical reorganization in humans.** J. ALATORRE WARREN, M. PONCE DE LEÓN, W.D. HOPKINS, C.P. ZOLLIKOFER.
- 11 The Role of Broca's Area in Stone Toolmaking Action Perception.** Z. ANWARZAI, S.S. PUTT, L. RUCK, C. YANG, P. SCHOENEMANN.
- 12 Finding heterochronic signals through the noise: can statistical reduction of landmark datasets find a heterochronic relationship in the pannins?** J.S. MASSEY, K.P. MCNULTY.
- 13 Enamel thickness in the deciduous dentition of humans and great apes.** A. ORTIZ, S.E. BAILEY, J. HUBLIN, M.M. SKINNER, G.T. SCHWARTZ.
- 14 Mixed support for the patterning cascade model in bears: Implications for understanding the evolution and development of hominoid molar morphology.** E.A. KOZITZKY, S.E. BAILEY.
- 15 Covariance among zygomatic bone shape, eye orbit shape, and the zygomaticotemporal space.** A. PETTIT, B. VILLMOARE.
- 16 Integration of the canine region within the hominine alveolar arch.** J. LAWRENCE, W.H. KIMBEL.

Session Forensic Anthropology  
30:

**Contributed Poster Presentations.** Chair: Nicole Siegel.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

5:30 **Odd number presenters stand by their posters.**

- 1 **The Frequency and Distribution of Drug Research Across the American Journal of Physical Anthropology: Does Drug Use Affect Skeletal Biology?** M.C. SPIROS, H.S. MCKEE.
- 2 **Research from records: retrieving and sharing useful data from a non-research database.** S. DANESHVARI BERRY, H.J. EDGAR.
- 3 **Current and proposed qualifications for forensic anthropologists.** N.V. PASSALACQUA, M.A. PILLOUD.
- 4 **NMDD: A new research resource for biological anthropology.** H.J. EDGAR, S.R. DANESHVARI BERRY.
- 5 **Using Elliptical Fourier Analysis to Validate the Use of Upper-Facial Traits in the Construction of the Biological Profile.** J.R. LEWMAN, S.P. NAWROCKI, K.E. LATHAM.
- 6 **Multi-Isotopic Investigation to Determine the Provenance of an Unidentified Female.** G. GOAD, K. VEROSTICK, E. KIMMERLE, G. KAMENOV.
- 7 **Differentiating human skeletal remains through energy dispersive X-ray fluorescence (EDXRF).** K. CAMPEAU.
- 8 **Best Practices for the Macerating Human Thyroid Cartilage.** A.M. LAGOY, T. SOMOGYI, E.A. EVANGELOU, E.A. DIGANGI.
- 9 **A Retrospective Analysis of Qualitative Postmortem Interval Estimation in Louisiana.** S.I. RECK.
- 10 **Features of Decomposition from an Accidental Burial with a Defined Postmortem Interval in a Northern Latitude State.** P.R. STUBBLEFIELD.
- 11 **Out in the Cold: How cold temperatures and weather conditions influence the rate of decomposition in pig proxies (*Sus scrofa*).** K.C. WOOLLEN.
- 12 **Shape analysis of the pubic symphyseal outline in a modern human sample.** M.J. RUE, C.C. CATALDO-RAMIREZ, R.R. DUNN, H.M. GARVIN.
- 13 **Application of the 3D quantitative shape analysis method for age assessment from os coxae in European samples.** A. KOTEROVA, J. VELEMINSKA, E. CUNHA, J. BRUZEK.
- 14 **Reconsidering osteoarthritis as a skeletal age indicator.** A.P. WINBURN, M.K. STOCK.

- 15 **Testing the applicability of shape-based computational age-at-death estimation methods using pubic symphyseal surface scans of Asian Origin.** J. KIM, B.F. ALGEE-HEWITT, D.K. STOYANOVA, C. FIGUEROA-SOTO, D.E. SLICE.
- 16 **Testing a computational approach for estimating age-at-death on a modern Portuguese population.** L.J. JOHNSON, J.D. BETHARD.
- 17 **Quantifying error in virtual data collection: the impact of MSCT scan segmentation protocol and inter-observer error in 3-D landmark placement on the human subadult pelvis.** M.K. STOCK, L.K. CORRON, L.E. CIRILLO, H.M. GARVIN, C.N. HULSE, S.J. COLE, K.E. STULL, A.R. KLALES.
- 18 **Estimating Body Mass for Subadults: A Radiographic Study of the Femur.** E.F. PINKSTON, S. GLASGOW, A. GRUENTHAL-RANKIN, M. RAMSIER, S. CHAN.
- 19 **Assessing the potential of ilium outlines, greater sciatic notch metrics, and indices of pubic/ischial length for subadult sex estimation.** H.M. GARVIN, K. SEVERA, E. TERNENT, M.K. STOCK, L. CIRILLO, K.E. STULL.
- 20 **A test of Wescott's second cervical vertebra sex estimation method on a middle-aged to senescent sample.** K.M. RAYMOND, D.K. JULIEN, L.C. COOPER, K.A. WEST, E.A. DIGANGI.
- 21 **Determining sex in forensic anthropology: A review of proposed methodologies.** S.A. WALTMAN.
- 22 **Sexual Dimorphism in the Proximal Phalanges of the Hand: Verification of Logistic Regression analysis methods.** I.T. NOBLE, D. MULHERN.
- 23 **Expression of Sexual Dimorphism Among the German, Irish, and Italian Ancestry Groups in the Huntington Collection.** A. ESPINOZA, D.R. HUNT, G. HUNT.
- 24 **Testing the effectiveness of methods for estimating biological sex from subadult skeletal remains.** D. ZABNICKA.
- 25 **Facial masculinity-femininity and socioeconomic status: A study of sub-Saharan Africans' 3D facial models.** A.I. YAHAYA, C. SOLIGO.
- 26 **Estimating Sex Using the Human Mandibular Canine.** B.L. BLEVINS.
- 27 **An examination of musculoskeletal markers to analyze activity levels of a documented modern population using the Coimbra method.** E.L. WIEDENMEYER, M. SPRADLEY, N.P. HERRMANN.
- 28 **Identifying Intracranial Complications of Sinusitis From Skeletonized Remains: Forensic and Bioarchaeological Implications.** S.M. MCCRANE.
- 29 **The Effects of Orthopedic Pathologies on the Prevalence of Hip Osteoarthritis.** A.M. SANCHEZ, S.D. TALLMAN.
- 30 **Variability of saw blades and saw marks measured from nonhuman bone: Implications for the evaluation of accuracy of microscopic saw mark analysis.** A.R. GROSSO, S.A. TOTH, D.L. NEIDICH.
- 31 **Relationships between individual level variables and fracture characteristics in human ribs subjected to anterior-posterior loading.** A.L. HARDEN, V.M. DOMINGUEZ, A.M. AGNEW.

- 32 **Fracture Patterning and Distribution in the Appendicular Skeleton as a Result of a Blast Event.** K.M. LANE, A.F. GOODING.
- 33 **The curious case of goldenhar-gorlin syndrome: Identification and skeletal manifestation.** D. LOPEZ, H. WALSH-HANEY.
- 34 **A Comparison of Gunshot Wound Trauma between Physical Crania and 3D Printed Models.** J.E. SANGER, E.A. DIGANGI.
- 35 **The Relationship Between Localized Bone Density and the Area and Perimeter of Exit Wounds.** E.A. EVANGELOU, T. SOMOGYI, K.E. SHERIDAN, E.A. DIGANGI.
- 36 **Estimation of Bullet Construction from Cranial Entrance and Exit Wound Diameters.** T. SOMOGYI, E.A. EVANGELOU, K.E. SHERIDAN, E.A. DIGANGI.
- 37 **Isotopic Analyses in Contemporary Forensic Cases from Coconino County, Arizona.** T. LAMBRIGGER, C.M. KELLNER, L. CZARNECKI, F. RAMOS.
- 38 **Variation of Skeletal Growth and Development Patterns in Populations with Diverse Socio-Economic Backgrounds.** L.K. CORRON, K.E. STULL, Y. YANG.
- 39 **Secular Change in Popular Morphological Traits of the Skull and Pelvis.** A.R. KLALES, H. LONG.
- 40 **Interpreting intra-population variability from dental morphology and tooth dimensions of a modern Seminole Native American sample.** M.K. GREEN, S.D. TALLMAN.
- 41 **Nonmetric cranial trait expression in pre-contact Southwest Native Americans and modern Asians.** M.L. ATKINSON, S.D. TALLMAN.
- 42 **Nasofacial skeletal differentiation among Equatorial Africans, Europeans and African-Americans.** A.S. WILLIAMS, A.D. FOSTER, R.G. FRANCISCUS.
- 43 **Secular change in macromorphoscopic trait frequencies in modern European Americans.** G.S. KILROY, B.S., S.D. TALLMAN, PH.D..
- 44 **A Forensic Anthropological Perspective on Latin American Genetic Diversity.** B.T. NEW, K. SPRADLEY, L. FEHREN-SCHMITZ.

## **Friday, Morning sessions.**

Session Evolutionary perspectives on the primate aging process  
31:

*Invited Podium Symposium.* Chair: Melissa Emery Thompson.

Co-organizers: Rosati, Alexandra, University of Michigan.

### **CC Ballroom A.**

Nonhuman primates are critical referents for understanding the evolution of human senescence and lifespan. Yet the very reason that primates are such important models –



their long lifespans – has limited their use in aging research. Most comparative perspectives on aging have been made through the lens of demography, by comparing mortality rates. However, there is very little understanding of what factors lead to ‘natural’ death in most species, let alone what factors contribute to variation in the aging process among individual primates. Thus, to better understand the evolution of lifespan, it is essential to uncover the underlying processes that contribute to aging. In this symposium, we bring together emerging perspectives on the aging process in primates. This work will highlight new data and theory on aging phenotypes, focusing on the physical, physiological, behavioral, and cognitive mechanisms that constrain lifespan across the primate order. Each paper will focus on one or more of the following questions: (1) What are the critical processes that comprise senescence in primates? (2) What social, ecological, or individual characteristics predict variation in health or the rate of aging? (3) How do primates adjust their behaviors and bodies to accommodate the aging process? Our participants will address different dimensions of aging and a diverse range of species, including humans living in the context of subsistence environments. Additionally, each paper will contextualize its findings within a broader comparative perspective to provide insights into the ultimate questions of how aging has been shaped by the evolutionary history of primates. A major goal of the symposium is to share the innovative toolsets being used to study aging by various long-term research groups, and in doing so, stimulate new collaborative research initiatives among participants.

- 8:00 **Physical frailty, aging, and mortality in wild chimpanzees.** M. EMERY THOMPSON, Z.P. MACHANDA, E. OTALI, M.N. MULLER, R.W. WRANGHAM.
- 8:15 **Skeletal aging in Virunga mountain gorillas (*Gorilla beringei beringei*) from Volcanoes National Park, Rwanda.** S.C. MCFARLIN, L. BAIGES-SOTOS, J. GALBANY, H. GLOWACKA, J. JUNNO, T. MUHIRE, C.B. RUFF, T.G. BROMAGE, M.R. CRANFIELD, W. ECKARDT, K. GILARDI, T.S. STOINSKI, A. MUDAKIKWA.
- 8:30 **Influence of physical activity on aging and frailty in human foragers.** M. SAYRE, H. PONTZER, B.A. WOOD, G.A. ALEXANDER, D.A. RAICHLIN.
- 8:45 **Glucocorticoid levels predict lifespan in wild female baboons.** S.C. ALBERTS, F.A. CAMPOS, J. ALTMANN, L. GESQUIERE, E.A. ARCHIE.
- 9:00 **Measuring Physiological Aging in a Subsistence Population.** T.S. KRAFT, B. TRUMBLE, H. KAPLAN, A. GARCIA, J. STIEGLITZ, M. GURVEN.
- 9:15 **Chimpanzee reverse zoonoses: unfortunate natural experiments in great ape comparative medicine and demography.** T.L. GOLDBERG, S. BASNET, M. EMERY-THOMPSON, J.E. GERN, K.A. GRINDLE, K.E. LANGENGRABER, Z. MACHANDA, J.C. MITANI, M.M. MULLER, J.D. NEGREY, E. OTALI, L. OWENS, A.C. PALMENBERG, T.E. PAPPAS, S. PHILLIPS-GARCIA, R.B. REDDY, E.J. SCULLY, R.W. WRANGHAM.
- 9:30 **Trade-offs between Reproduction and Immunity in Wild Female Chimpanzees (*Pan troglodytes schweinfurthii*) of Kibale National Park, Uganda.** S. PHILLIPS-GARCIA, T.L. GOLDBERG, M.N. MULLER, Z.P. MACHANDA, S. FRIANT, E.

OTALI, J. CARAG, K.E. LANGERGRABER, J.C. MITANI, R.W. WRANGHAM, M. EMERY THOMPSON.

9:45 **Changing social relationship among aging male chimpanzees.** Z. MACHANDA, A. ROSATI, L. HAGBERG, E. OTALI, M. EMERY THOMPSON, M. MULLER, R. WRANGHAM.

10:00 **BREAK.**

10:30 **Aggression, coalition formation, and aging in wild chimpanzees.** M.N. MULLER, M. EMERY THOMPSON, D.K. ENIGK, L. HAGBERG, Z.P. MACHANDA, K. SABBI, R.W. WRANGHAM.

10:45 **Age and pathology-related changes in neuron density in the chimpanzee cortex.** M.K. EDLER, E.L. MUNGER, P.R. HOF, W.D. HOPKINS, J.J. ELY, J.M. ERWIN, R.S. MEINDL, E.J. MUFSON, C.C. SHERWOOD, M. RAGHANTI.

11:00 **Lifespan changes in macaque social and economic decision making.** A.G. ROSATI.

11:15 **Age-related decline in executive function in primates.** A. LACREUSE.

11:30 **Transcriptional signatures of the aging nonhuman primate brain.** K.L. CHIOU, A.R. DECASIEN, M.J. MONTAGUE, C.C. SHERWOOD, M.L. PLATT, J.P. HIGHAM, N. SNYDER-MACKLER.

11:45 **Discussant: Susan Alberts.**

12:00 **National Institutes of Aging Information Session: Melissa Gerald.**

Session Energetics, Locomotion, and Nutrition

32:

*Contributed Podium Presentations.* Chair: Robin Bernstein.

**CC Room 25.**

2:30 **Changes in costovertebral joint anatomy have been selected for in humans and increase ventilation during endurance running.** W.E. CALLISON, N.B. HOLOWKA, D.E. LIEBERMAN.

2:45 **No dilemma: A broad pelvis explains some of the advantages of women's gait.** C.M. WALL-SCHEFFLER, M.J. MYERS.

3:00 **Walking before footwear: plantar calluses protect the foot without trading-off tactile sensitivity.** N.B. HOLOWKA, B. WYNANDS, T. DRECHSEL, D.W. HAILE, R. OJIAMBO MANG'ENI, P. OKUTOYI, T.K. SIGEI, V.A. TOBOLSKY, A.K. YEGIAN, C. ZIPPENFENNIG, T.L. MILANI, D.E. LIEBERMAN.

3:15 **Endurance activity as a driver of morphological thermal adaptation: the energetics of ultramarathons in extreme temperatures.** D.P. LONGMAN, A. MACINTOSH, R. ROBERTS, S. OAKLEY, J.C. WELLS, J.T. STOCK.

3:30 **Being Overweight is Associated with Lower Physical Activity in US Population but Not among Forager-Horticulturalists.** D.K. CUMMINGS, B.C. TRUMBLE, J. STIEGLITZ, H. KAPLAN, M. GURVEN.

3:45 **Extreme endurance running alters the gut microbiota.** R.N. CARMODY, E.M. VENABLE, A.S. BOLZE, L. CHRISTOPHER, B.A. CARLSON, M.P. LOUIS, T. GARLAND, JR..

- 4:00 **The effect of the alpha-actinin 3 (ACTN3) R577X polymorphism and mtDNA on energy expenditure in modern humans.** Z.S. SWANSON, H. PONTZER, A. LUKE, L.R. DUGAS, M.E. STEIPER.
- 4:15 **Paternal age at conception effect on offspring telomere length as a potential adaptive intergenerational signaling mechanism: testing of transmission across four generations in the Philippines.** D.T. EISENBERG, N.R. LEE, P.H. REJ, M. HAYES, C.W. KUZAWA.
- 4:30 **Culture change in the urban north: The intergenerational effects of dietary and sociodemographic patterns among Alaska Native women and children living in Anchorage, Alaska.** R.L. FRIED, C.W. KUZAWA.
- 4:45 **Evaluating the effects of maternal prenatal stress on fetal growth patterns and birth outcomes in Soweto, South Africa.** A.W. KIM, R.S. MOHAMED, L. NYATI, C.W. KUZAWA, S.A. NORRIS.
- 5:00 **Chronic stressors lead to dysregulated endocrine-immune function and diabetes risk in Honduran immigrant women.** A.R. GARCIA, S. MURILLO, B.C. TRUMBLE, M.D. GURVEN, A.D. BLACKWELL.
- 5:15 **The Potential Effect of Climate Adaptation on the Morphology of the Pelvis.** J. EYRE.

Session Hominin Fossils and Evolution  
33:

*Contributed Podium Presentations.* Chair: Juliet Brophy.

**CC Room 25.**

- 8:00 **Phylogenetic Analysis of Miocene Apes and Early Hominins Using Qualitative and Quantitative Morphological Characters.** K.D. PUGH.
- 8:15 **Hominin origins: New evidence from the eastern Mediterranean.** D.R. BEGUN, M. BÖHME, G. KOUFOS, N. SPASSOV, A. SEVIM EROL, A. YENER YAVUZ.
- 8:30 **4.2 Ma *Australopithecus anamensis* axial remains: the oldest australopith vertebrae in the fossil record.** M.R. MEYER, S.A. WILLIAMS.
- 8:45 **Intraspecific variability in early *Australopithecus afarensis* mandibular morphology: new insights from 3.6 Million-year-old hominin juvenile mandibles from Woranso-Mille, Ethiopia.** Y. HAILE-SELASSIE, T.M. RYAN.
- 9:00 **Morphometric affinities of the Burtele hallux with implications for inferring hominin pedal grasping capabilities.** T.C. PRANG.
- 9:15 **The atlas of the *Australopithecus* specimen StW 573 (“Little Foot”).** A. BEAUDET, R.J. CLARKE, J.L. HEATON, T.R. PICKERING, K.J. CARLSON, R. CROMPTON, T. JASHASHVILI, L. BRUXELLES, K. JAKATA, J. HOFFMAN, J. DHAENE, D. STRATFORD.
- 9:30 **The wrist and hand of the StW 573 (“Little Foot”).** T. JASHASHVILI, B.A. PATEL, K.J. CARLSON, J.L. HEATON, T.R. PICKERING, R. CROMPTON, K. KUMAN, A. BEAUDET, J. MCCLYMONT, L. BRUXELLES, D. STRATFORD, R.J. CLARKE.

9:45 **A nearly complete lower back of *Australopithecus sediba*.** S.A. WILLIAMS, T.C. PRANG, M.R. MEYER, K.R. OSTROFSKY, T.K. NALLEY, D. GARCÍA-MARTINEZ, M. BASTIR, P. SCHMID, S.E. CHURCHILL, L.R. BERGER.

10:00 **BREAK.**

10:30 **Comparative two-dimensional relative enamel thickness (RET) of South African hominin premolars.** M.C. O'HARA, M.M. SKINNER, D. GUATELLI-STEINBERG.

10:45 **New mandible from Olorgesailie sheds light on Middle Pleistocene human evolution in Africa.** S.E. BAILEY, R. POTTS.

11:00 **Bony labyrinth morphology of the Broken Hill, Eyasi I, and Kabua I hominin fossils.** H. REYES-CENTENO, C. STRINGER, K. HARVATI.

11:15 **Comparative morphology of the Herto 16/5 juvenile cranium (Middle Awash, Ethiopia).** G.D. RICHARDS.

11:30 **The Guercy 1 Neanderthal cranium from Baume Moula-Guercy (Soyons, Ardèche).** R.S. JABBOUR, G.D. RICHARDS, G. GUIPERT, A. DEFLEUR.

11:45 **The path to *Homo*, revisited.** L. SCHROEDER, R.R. ACKERMANN.

Session Bioarchaeology: Disease, Diet, and Violence

34:

*Contributed Podium Presentations.* Chair: Halcrow, Sian.

**CC Room 26 AB.**

8:00 **To live and die in the Ocoña Valley: the human remains from Corral Redondo, Peru.** M. LOZADA, D. ZBOROVER, S. CHEEVER.

8:15 **Bioarchaeological analysis of Nasca 'trophy' head individuals from the site of Zorropata in Peru (AD 450-1000).** C.M. KELLNER, S. DOST KERCHUSKY.

8:30 **Violence and the "other": migration and sacrifice in pre-Hispanic central Mexico.** S. PACHECO-FORÉS.

8:45 **Skeletal remains and historical traces of Ming Dynasty elites in Shaanxi, China.** E. BERGER, W. YE, L. YANG.

9:00 **Biological distance at the center of the Viking world.** E.M. PESCHEL, B. HALLGRIMSSON, M. KATZENBERG.

9:15 **Morphological Analysis of Human Skeletal Remains from a Late Neolithic Dolmen, Switzerland.** I. SIEBKE, A. FURTWÄNGLER, N. STEURI, G. ARENZ, M. RAMSTEIN, J. KRAUSE, S. LÖSCH.

9:30 **Migration into Egypt during the Second Intermediate Period.** C. STANTIS, H. SCHUTKOWSKI.

9:45 **Absent to Limited Breastfeeding in 19<sup>th</sup> Century Dairy Farmers from the Netherlands.** A.L. WATERS-RIST, M.L. HOOGLAND.

10:00 **BREAK.**

10:30 **Are we what we eat? A 3D Geometric morphometric analysis of human mandibular variation over time in Britain in relation to dietary changes.** C.S. HIRST.

- 10:45 **Stable Isotope Measures of Weaning Age and Early Childhood Diet in the Ancient Andes: Variation in Early Life Experiences and Health Outcomes across Status and Sex in Tiwanaku-Affiliated Sites in Peru and Bolivia.** A.M. GREENWALD, D. BLOM, N. ZOLOTOVA, K. KNUDSON.
- 11:00 **Refining our understanding of human diets: Using bulk and compound-specific amino acid stable isotope data to investigate pre-Columbian dietary practices of Lake Titicaca, Bolivia inhabitants (1500 BC – AD 1100).** M.J. MILLER, I. KENDALL, S. HALCROW, R.P. EVERSLED, C.A. HASTORF.
- 11:15 **Evidence for intestinal parasitic infection from coprolites at the Bronze Age settlement of Must Farm, UK (920-790 BCE).** M.L. LEDGER, H. WHELTON, R. BALLANTYNE, I.D. BULL, M. KNIGHT, P.D. MITCHELL.
- 11:30 **A Systematic Review of Palaeoepidemiological Investigations in Neoplastic Disease.** T. SIEK.
- 11:45 **Comparison of Musculoskeletal Disorders Associated with Diabetes in Three North American Historical Human Skeletal Collections.** C.F. UPSON-TABOAS.

Session Primate Conservation  
35:

*Contributed Podium Presentations.* Chair: Linda Marchant.

**CC Room 26 C.**

- 8:00 **Conservation to Coexist: Participatory Action Research for Wildlife Conservation, Economic Development, and Biological Anthropology Research.** K.M. MILICH, K. SORBELLO, J. MCCARTEN, L. WISEMAN-JONES, R. BUSOBOZI, M. KUGONZA.
- 8:15 **Effective seed dispersal of an economically important plant resource by western chimpanzees at Fongoli, Senegal.** W.D. AGUADO, H.S. ROGERS, S. LINDSHIELD, J.D. PRUETZ.
- 8:30 **Mitochondrial DNA Demonstrates the Significance of a Western Gateway in Uganda for Eastern Chimpanzee (*Pan troglodytes schweinfurthii*) Gene Flow.** A.M. RICH, C.A. SCHMITT, M.D. WASSERMAN, K.D. HUNT, F.A. KAESTLE.
- 8:45 **Biomarkers of cardiac health across the lifespan in wild-born chimpanzees (*Pan troglodytes*).** M.F. COLE, A.G. ROSATI.
- 9:00 **Modeling rainforest ecology as a product of local socioeconomic pressures in Masoala National Park, Madagascar.** R.J. BANKOFF.
- 9:15 **Species-Specific Scale Responses to Habitat Loss in a Nocturnal Lemur.** T.S. STEFFENS, F. MERCADO MALABET, S.M. LEHMAN.
- 9:30 **Water availability, primate ranging behavior, and implications for parasite transmission: an experimental and observational study of wild red-fronted lemurs (*Eulemur rufifrons*) in a dry deciduous forest.** C.R. AMOROSO, P.M. KAPPELER, C. FICHTEL, C.L. NUNN.

- 9:45 **Quantitatively designing and testing the effects of data-driven interventions to address lemur-hunting in Madagascar.** C. BORGERSON, B. RAZAFINDRAPAOLY, D. RAJAONA, B. RASOLOFONIAINA.
- 10:00 **BREAK.**
- 10:30 **Applying the random encounter model to estimate density of *Cercopithecus lomamiensis* from camera traps in the Lomami National Park and buffer zone of the Democratic Republic of the Congo.** C.S. FOURNIER KORCHIA, E.G. NOONBURG, P. AYALI, T.B. HART, J.A. HART, K.M. DETWILER.
- 10:45 **Its elementary my dear anthropologist: using lead and arsenic concentrations and stable carbon and nitrogen isotope analysis to estimate anthropogenic disturbance among free-ranging vervet monkeys (*Chlorocebus pygerythrus*) in South Africa.** J.E. LOUDON, A.E. LEWIS, J.P. GROBLER, T.R. TURNER, M. SPONHEIMER.
- 11:00 **An Ethnographic Approach to Characterizing Zoonotic Disease Risk from Primate Hunting in an Indigenous Reserve in Guyana.** M.S. MILSTEIN, C.A. SHAFFER, T.M. WOLF, D.A. TRAVIS.
- 11:15 **Paternal activity budgets of San Martin titi monkeys (*Plecturocebus oenanthe*) in response to habitat destruction, daily temperature range, and infant age.** S. HODGES.

Session 36: Bioarchaeology of Urbanization: The Biological, Demographic, and Social Consequences of Population Increase and Agglomeration

*Invited Poster Symposium.* Chair: Tracy K. Betsinger.

Co-organizers: Tracy K. Betsinger, SUNY Oneonta; Sharon N. DeWitte, University of South Carolina.

## **CC Room 22.**

Over half of people today live in cities, and urban populations will increase in the future. It is crucial to understand the consequences that urbanization has had and will continue to have on human populations. Urbanization has long been a focus of bioarchaeological research, but seldom has this research been brought together in a cohesive way to explore the range of human biological, demographic, and sociocultural responses to this major shift in settlement pattern. Urbanization is characterized by population accumulation and increased population density, among other features, and is frequently associated with negative biological impacts. However, the relationship between urbanization and human “health” is nuanced and require a careful examination, particularly given the heterogeneity that exists within and between urban contexts. Studies of contemporary urbanization have found both positive and negative outcomes, which likely have parallels in past human societies. Indeed, bioarchaeological studies of urbanization have yielded varying results, including differences based on age, sex, and socioeconomic status. The impacts of urbanization are surely dependent, at least in part, on local ecological and sociocultural conditions. To explore the variability in human responses to urbanization, this session will include

studies from a wide range of geographic locations (e.g., Americas, Europe, Asia) and temporal periods (e.g., 5000 BC – 1900 CE). Additionally, the studies presented here utilize an extensive array of bioarchaeological methodological approaches and lines of evidence to explore whether and how urbanization impacts biology, demography, and cultural behavior. Included in our session are studies that incorporate isotopic analysis of diet and mobility, archaeoparasitology, stress markers, dietary deficiencies, growth, degenerative joint disease, ancient DNA, measures of mortality and frailty, and mortuary patterns. These diverse studies of a range of populations enable cross-cultural and temporal comparisons to be considered, thus making our understanding of the impact of urbanization more robust and holistic.

**Discussant: Charlotte Roberts.**

- 1 **Colonial urbanism: A comparative exploration of skeletal stress in two 18<sup>th</sup> century North American French colonies.** A.B. SCOTT, M. DANFORTH, S. MACINNES, N. HUGHES, M. FONZO.
- 2 **With People, came Parasites: An examination of human intestinal parasites and urbanization at the 18<sup>th</sup> century Fortress of Louisbourg.** M. FONZO, A.B. SCOTT, M. DUFFY.
- 3 **Royal Estates and Commoner Foods: Reconstructing Diet among Servants in the Inka Imperial Heartland.** B.L. TURNER, C.L. NUÑEZ FLORES, B.I. QUISPE VILCAHUAMAN.
- 4 **Exploring patterns of appositional growth amongst the urban child.** R. IVES, L. HUMPHREY.
- 5 **Residual Rickets and Respiratory Disease in Rural and Urban Post-Medieval London.** D.A. BOYD.
- 6 **Dietary variation in an urbanizing city: A temporal analysis of diet in Late Medieval London using stable isotopes.** B.S. WALTER, S.N. DEWITTE, T. DUPRAS, J. BEAUMONT.
- 7 **The Impact of Industrialisation on London Health.** J.J. BEKVALAC, G.A. WESTERN.
- 8 **Patterns of mobility in the early stage of urbanization of Viking Age Sigtuna, Sweden.** A.S. KJELLSTROM.
- 9 **The Bioarchaeology of Urbanisation in Denmark.** J.A. GAMBLE.
- 10 **Impact of urbanization on tuberculosis and leprosy prevalence in medieval Denmark.** K.S. KELMELIS, D.D. PEDERSEN.
- 11 **Physical Activity as Evidenced by Degenerative Joint Disease in Adults from a Rural and Urban Medieval Polish Comparison.** H.M. JUSTUS, T.K. BETSINGER, A.M. AGNEW.
- 12 **Frailty and Survivorship in Medieval Poland: A Comparison of Urban and Rural Populations.** T.K. BETSINGER, S.N. DEWITTE, H. JUSTUS, A.M. AGNEW.
- 13 **Urban-rural differences in respiratory tract infections in medieval and early modern Polish subadult samples.** M. KRENZ-NIEDBAŁA, S. ŁUKASIK.
- 14 **Childhood morbidity and mortality in the rising urban environments of the Industrial Era.** S. REEDY.

- 15 **Patterns of land use in the early urban centers of the Near East: bioarchaeological evidence.** A. SOŁTYSIAK.
- 16 **Understanding Heterogeneity in Urban Mortuary Behavior: Between Action and Symbolic Meaning in the Indus Age.** G. ROBBINS SCHUG.
- 17 **Urbanization and Ancient Parasitism.** D. SHIN, S. SHIM, H. LEE, Y. KIM, J. HONG, M. SEO.

Session 37: Evidence and methods surrounding the use of entheses to reconstruct muscle anatomy and activity

*Invited Poster Symposium.* Chair: Karyne N. Rabey.

Co-organizers: Karyne N. Rabey, Division of Anatomy, Department of Surgery, University of Alberta; Erin Marie Williams-Hatala, Department of Biology, Chatham University.

### **CC Room 23.**

The ability to make behavioural inferences from skeletal remains is crucial for understanding the habitual behaviours of past human populations and extinct animals. Muscle attachment site (enthesis) morphologies are often used by researchers in fields as diverse as bioarchaeology and palaeontology to infer cultural behaviour, technology use, subsistence strategies, labour differences, social stratification, locomotor patterns, and evolutionary pathways. Their use stems from the fact that some entheses tend to be clearly visible on the surface of bone, and are thought to reflect aspects of the muscular anatomy and therefore potential muscle recruitment history. However, the anatomy, physiology, and mechanical properties of the muscle/tendon-bone interface are complex, and numerous variables are known to influence enthesal morphology (e.g., muscle function, enthesal type, biomechanics, age, sex, genetics, health variables). Yet the interactive and dynamic influences of these variables are rarely taken into account in muscular and behavioural reconstructions. Additionally, multiple methods to attempt to qualify and/or quantify enthesal morphologies and function based on surface variables exist, but none of them have been experimentally validated. Thus, we are currently uncertain of both the relationships among, and the underlying mechanisms linking muscle anatomy, behavioural profile, and enthesal morphology. This symposium has been developed to create cross conversation among researchers conducting enthesal research, with the aim of working toward greater consideration of the complexity of the processes governing enthesal morphology in analyses and methodological standardization.

**Discussants:** Karyne N. Raybe, Erin Marie Williams-Hatala.

- 1 **The Aetiology of Enteseal Changes - Insights from the Biomedical Literature.** C.A. WILCZAK, C.Y. HENDERSON, V. MARIOTTI, S. VILLOTTE.
- 2 **Covariation bone biomechanics and enteseal changes in reindeer long bones – implication of activity?** S.T. NIINIMÄKI, H.A. PUOLAKKA, A.K. SALMI.



- 3 **Spring function of the Achilles tendon in walking and running gaits.** A.D. FOSTER, J.W. YOUNG, F.F. CAPOBIANCO III, J.T. PEABODY, N.A. PULEO.
- 4 **Elevated activity levels do not influence extrinsic fiber attachment morphology on the surface of muscle-attachment sites.** C.M. TURCOTTE, D.J. GREEN, K. KUPCZIK, S. MCFARLIN, E. SCHULZ-KORNAS.
- 5 **Markers of subtle activity variation? Enthesis bilateral asymmetry in humans.** M.S. DRAPEAU, O.A. DE CARVALHO.
- 6 **Comparative morphology of the hominoid subscapularis entheses.** D.J. GREEN.
- 7 **The empirical evidence of a relationship between enthesal changes and past human behaviors: Some examples and counterexamples, focusing on the upper limb.** S. VILLOTTE.
- 8 **Interdisciplinary evidence of the effects of physical activity in the patterns of human hand entheses.** F. KARAKOSTIS, K. HARVATI.
- 9 **Can muscle activity be predicted from surface and internal enthesal morphology?** K.N. RABEY, K.G. HATALA, E. WILLIAMS-HATALA.
- 10 **New methods for quantifying enthesal shape and adaptation to functional loading.** N. KONOW, J.M. WINCHESTER, D.M. BOYER, I.J. WALLACE.
- 11 **A Photogrammetric Method for Quantifying Enthesal Shape and Rugosity.** E.S. WILLIAMS-HATALA, K.G. HATALA, M.L. COLLYER, S. MEGHERHI, K.L. FISKE, O. CIROLI, K.N. RABEY.

Session 38: Global leadership in dental anthropological research: A symposium in honor of G. Richard Scott

*Invited Poster Symposium.* Chair: Marin A. Pilloud.

Co-organizers: Victoria M. Swenson (University of Nevada, Reno); Donovan M. Adams (University of Nevada, Reno).

### **CC Room 24.**

For over 40 years, G. Richard Scott has made significant advances and contributions to the field of dental anthropology. He is a Professor of Anthropology Emeritus at the University of Alaska, Fairbanks and a Foundation Professor at the University of Nevada, Reno. He has served as the president of the Dental Anthropology Association, and the past and current editor of the journal *Dental Anthropology*. Scott has produced three books, two edited volumes, and over 70 articles and book chapters, which have placed him as a leading expert on dental anthropology with a focus on dental morphology. Scott is well known for creating and defining, along with Christy G. Turner II, many of the morphological traits as part of the Arizona State University Dental Anthropology System (ASUDAS; also known as the Turner-Scott dental anthropology system). Upon Turner's death, Professor Scott initiated the "Christy G. Turner, II Legacy Project" by scanning over 30,000 data sheets and over 3,000 photographic slides, and calculating frequency distributions for 29 key crown and root traits of different population groups. Undertaking this monumental task to share with

the discipline is testament to his commitment to the field, his colleagues, and students. This symposium brings together experts in the field of dental anthropology to honor the interdisciplinary and ground-breaking nature of Scott's work.

**Discussant: Clark Spencer Larsen.**

- 1 **It's getting better all the time: A look at the contributions of G. Richard Scott to dental anthropology.** C.E. SKIPPER, R.L. PERASH, L.E. CIRILLO, V.M. SWENSON, D.M. ADAMS, R.L. GEORGE, S.J. COLE, C.N. HULSE, T. VLEMINCQ-MENDIETA, D. KENESSEY, S. HAY, M.A. PILLOUD.
- 2 **Dental morphology of fossil *Homo sapiens*.** G. SCOTT, M. MARTINON-TORRES.
- 3 **Exploring the relationship between dental development, population variation, and environment.** K.E. STULL, L. CORRON, C.N. HULSE, Y. YANG.
- 4 **Native American origins: An interdisciplinary critique of current models.** J.F. HOFFECKER, G.R. SCOTT, D.H. O'ROURKE, M.A. SICOLI, L.J. HLUSKO.
- 5 **Population Variation in Dental Development and Its Effect on Forensic Age Estimation.** K.N. HEIM, M.A. PILLOUD, H. GEHA, Y. WU.
- 6 **Examining the frequency of crenulated premolars and their association with crenulated molars.** C. MAIER, G. SCOTT.
- 7 **A validation of dental methods to estimate ancestry.** D.E. KENESSEY, A. SBEI, M. MCKINNEY, M.A. PILLOUD.
- 8 **Tooth be told: A preliminary investigation of dental morphological variation among medieval Polish Populations.** V.M. SWENSON, A. SPINEK, K. TUNIA.
- 9 **Validating foundational assumptions of dental morphology using quantitative genetics.** K.S. PAUL, C.M. STOJANOWSKI, W.N. DUNCAN, K.M. JOHNSON.
- 10 **Quest for consilience: Using dental morphology, craniometrics, and stable isotopes to classify an undocumented skull collection.** D. DECHANT, L.E. CIRILLO.
- 11 **'Basque'ing in Uniqueness: An Examination of Basque Dental Variation.** D. MALARCHIK, G. SCOTT.
- 12 **Exploring the population history of modern Latinos through dental morphology.** R.L. GEORGE, G. SCOTT.
- 13 **World-wide variation in incisor shoveling reveals evidence of selection in the Beringian Standstill population.** L.J. HLUSKO, J.P. CARLSON, G. CHAPLIN, S.A. ELIAS, J.F. HOFFECKER, M. HUFFMAN, N.G. JABLONSKI, T.A. MONSON, D.H. O'ROURKE, M.A. PILLOUD, C. TAYLOR, G.R. SCOTT.
- 14 **The muddle in the middle: Dental morphological assessment of population diversity on the Peruvian Central Coast during the Prehispanic Period.** T. VLEMINCQ-MENDIETA, S. HILLSON, L.S. OWENS, P.A. EECKHOUT, K. MAKOWSKI.
- 15 **The ASUDAS and fossil hominin teeth: categorical success with qualification(s).** J.D. IRISH.

16 **Ancient Genetic Analysis of the Northwest Alaskan Birnirk to Thule Archaeological Transition.** S.L. RAGSDALE, L.E. NORMAN, J.C. TACKNEY, D.H. O'ROURKE.

## Friday, Afternoon sessions.

Session The Evolution of Syphilis: A New Approach (Joint PPA-AAPA Symposium)  
39:

*Invited Podium Symposium.* Chair: Brenda J. Baker.

### CC Ballroom A.

The perception that a new disease suddenly appeared in Europe in the late 15th century sparked debate about the origin of syphilis that has raged for more than five centuries. Questions concerning the spread of infections (pinta, yaws, bejel, and syphilis) caused by *Treponema pallidum* subspecies and their emergence in different parts of the world continue to be contested in anthropological and medical circles. Expanding upon an interdisciplinary seminar held at the School for Advanced Research in April 2018, this interdisciplinary symposium aims to move beyond this debate to tackle broader questions and improve understanding of treponemal disease. How did the causative organism(s) and humans co-evolve? How can investigating the ways that related treponemal diseases affected people across both time and space be advanced? Until recently, *T. pallidum* could not be cultured and subspecies relationships were poorly known because phylogenetic reconstructions derived from a small number of genetic loci. Understanding treponemal biology, epidemiology, and clinical manifestations is crucial for vaccine development today and for investigating the distribution of infection in past populations, which also necessitates use of standard diagnostic criteria and approach for recording skeletal lesions. Adequate contextualization requires information on cultural and environmental conditions and site dating with justification for correcting marine or freshwater reservoir effects. Stable isotope analyses may assess aquatic contributions to diet, physiological changes arising from treponemal disease and its treatments (e.g., mercury), or residential mobility of those affected. Participants will review the current state of scholarship and make recommendations to stimulate future work. Shifting the focus from the point of origin to who was affected (e.g., children versus adults, males or females, among different socioeconomic groups) and its distribution (e.g., along rivers or coastlines or inland, in urban and rural settings) will advance our understanding of treponemal disease and its impact on people through time.

2:30 **Treponemal infections: One disease or many?** S.A. LUKEHART, D.C. MABEY.

2:45 **Disease ecology and the relationship of human- and nonhuman primate-infecting *Treponema pallidum*.** S. KNAUF, C. ROOS.

3:00 **Phylogenetic investigations of *Treponema pallidum* and related spirochetes.** S. WININGEAR, A.C. STONE.

- 3:15 **Historic *Treponema pallidum* genomes: Towards a reconstruction of the evolution of treponemal diseases using ancient DNA.** V.J. SCHUENEMANN.
- 3:30 **Radiocarbon Evidence Pertaining to the Origin and Spread of Treponemal Disease.** M. DEE.
- 3:45 **A Biogeochemical Assessment of Treponemal Disease: Diagnosis, Host Mobility, & Mercury Treatment.** L.A. GREGORICKA.
- 4:00 **A Critical Review of Diagnostic Criteria Used to Identify Treponemal Infection in Human Skeletal Remains.** B.J. BAKER.
- 4:15 **Treponemal disease in Europe: A critical review of the skeletal evidence.** C.A. ROBERTS.
- 4:30 **Silent evidence of Pre-Columbian treponemal infection in the Western half of the Old World.** M. HENNEBERG, R.J. HENNEBERG.
- 4:45 **Evaluating the evidence of treponemal disease from India.** V. MUSHRIF-TRIPATHY.
- 5:00 **The Antiquity of Treponemal disease in the Asia-Pacific regions: Implications for settlement history.** H.R. BUCKLEY, M. VLOK, K. DOMETT, H. HOANG TRINH, M. OXENHAM.
- 5:15 **Sociopolitical patterns in treponemal disease prevalence in the pre-Columbian eastern United States.** M.O. SMITH, T.K. BETSINGER.
- 5:30 **Discussion: Moderated by Brenda Baker.**

Session Primate Behavior and Ecology  
40:

*Contributed Podium Presentations.* Chair: Rebecca Stumpf.

**CC Room 25.**

- 2:30 **Competitive ability complements coalition formation in wild male chimpanzees.** D.K. ENIGK, M. EMERY THOMPSON, Z.P. MACHANDA, E. OTALI, R.W. WRANGHAM, M.N. MULLER.
- 2:45 **Sex differences in adrenal hormone production throughout development among Kanyawara chimpanzees (*Pan troglodytes schweinfurthii*) at Kibale National Park, Uganda.** K.H. SABBI, M.N. MULLER, Z.P. MACHANDA, E. OTALI, R.W. WRANGHAM, M. EMERY THOMPSON.
- 3:00 **What factors influence nest reuse among chimpanzees (*Pan troglodytes verus*)?** A.R. HALLORAN, C.E. BOLTEN.
- 3:15 **The impact of sensory mode on anti-predator responses of Rylands' bald-faced saki monkeys (*Pithecia rylandsi*) in Peru.** D.B. ADAMS, D.M. KITCHEN.
- 3:30 **Brain size, body size, and time allocation strategies in primates.** J.M. SCHROCK, L.S. SUGIYAMA, J. SNODGRASS.
- 3:45 **Health Outcomes Associated with Higher Allostatic Load in Zoo-Housed Western Lowland Gorillas (*Gorilla gorilla gorilla*).** A.N. EDES, B.A. WOLFE, D.E. CREWS.

- 4:00 **Home range and territoriality suggest that venom as a weapon in slow lorises.** A.I. NEKARIS, M. CAMPARA, S. POINDEXTER, T. QUEIROZ, A. WELDON, V. NIJMAN, M.A. IMRON.
- 4:15 **Identifying a new dwarf lemur(*Cheirogaleus*) species from southern Madagascar.** A.T. MCLAIN, R. LEI, C.L. FRASIER, J.M. TAYLOR, C.A. BAILEY, S.E. ENGBERG, R.A. MITTERMEIER, R. RANDRIAMAMPIONONA, E.E. LOUIS, JR..
- 4:30 **Glandular microbiomes vary by species and host traits in wild and captive lemurs.** S.L. BORNBUSCH, L.K. GREENE, R.L. HARRIS, C.M. DREA.
- 4:45 **Keeping their cool: Behavioral thermoregulation and body temperature patterns of wild vervet monkeys.** R. MCFARLAND, L. BARRETT, A. FULLER, R.S. HETEM, S.K. MALONEY, D. MITCHELL, S.P. HENZI.
- 5:00 **Conditional dispersal and its effects on kin cooperation in female *Colobus vellerosus*.** E.C. WIKBERG, N. TING, P. SICOTTE.
- 5:15 **Coevolution and coextinction of primates and their parasites.** J.P. HERRERA, C.L. NUNN.
- 5:30 **Contribution of tree-fall canopy gaps to variation in nitrogen content of fruits and leaves from *Varecia* and *Eulemur* food trees in northeastern Madagascar.** M. MOGILEWSKY, N. VASEY, M. ANDRIAMAHAIHAVANA, Z. RAKOTOMALALA, T.M. EPPLEY.
- 5:45 **Diversity and distribution patterns of a primate community in the Peruvian Amazon.** R.M. HORES, S.M. FORD.

Session Primate Postcranial Functional Morphology  
41:

*Contributed Podium Presentations.* Chair: Jacqueline Runestad Conner.

**CC Room 26 AB.**

- 2:30 **Rethinking the evolution of the plantar aponeurosis and the medial longitudinal arch.** D.E. LIEBERMAN, N.B. HOLOWKA, F. SICHTING.
- 2:45 **Influence of substrate compliance on wild primate gait kinematics.** J.W. YOUNG, N.T. DUNHAM, A. MCNAMARA, L.J. SHAPIRO.
- 3:00 **Impact of gait selection on potential limb interference in primates and cats.** B.A. PERCHALSKI, A. ZEININGER.
- 3:15 **Lighten the load: calcanei of leaping galagids have relatively less cortical bone volume than quadrupedal species.** K.L. LEWTON, B.A. PATEL.
- 3:30 **Locomotor ontogeny and trabecular architecture within the hands and feet of great apes.** A.J. RAGNI.
- 3:45 **3-D kinematics, kinetics, and EMG of knuckle-walking in chimpanzees.** N.E. THOMPSON, B.A. PATEL, J.T. STERN JR, S.G. LARSON.
- 4:00 **Studying trabecular bone tissue structure-function relationship using 3D printing.** M.M. BARAK, M. PATEL.

- 4:15 **Hierarchical Patterns of Constraint and Functional Trait Complexes in the Primate Shoulder and Hip Regions.** E.R. AGOSTO, B.M. AUERBACH.
- 4:30 **Covariance between carpal morphology and suspensory behavior in extant anthropoids, with implications for functional analysis of fossil specimens.** C. WUTHRICH.
- 4:45 **Do structural equation models work to explain the factors shaping cortical bone morphology?** R.A. JOHNSTON, L.W. COWGILL.
- 5:00 **Arboreal Positional Behavior in Humans, Chimpanzees, and Gorillas.** E.E. KOZMA, H. PONTZER, C. SANZ, D. MORGAN.
- 5:15 **The evolution of the primate forelimb and neocortical areas involved in manual dexterity.** A.C. HALLEY, M.K. BALDWIN, L. KRUBITZER.
- 5:30 **Differences in fore- vs. hindlimb autopod function in extant hominoids is reflected in pollical vs. hallucal metapodial strength properties.** B.A. PATEL, T. JASHASHVILI, C.M. ORR.

Session Primate Reproduction  
42:

*Contributed Podium Presentations.* Chair: Erin Vogel.

**CC Room 26 C.**

- 2:30 **A tale of three monkeys: male-mediated prenatal loss explained.** J.C. BEEHNER, M.N. ZIPPLE, E.K. ROBERTS, S.C. ALBERTS.
- 2:45 **Linking female sociability and infant survival in capuchins: the roles of direct and indirect social connections, food competition, and energetic status.** U. KALBITZER, M.L. BERGSTROM, F.A. CAMPOS, S.D. CARNEGIE, M. EMERY THOMPSON, K.M. JACK, A.D. MELIN, L.M. FEDIGAN.
- 3:00 **Adolescent female orangutans benefit from associations with their mother in Gunung Palung National Park, West Kalimantan, Indonesia.** C.A. O'CONNELL, W. SETIADI, C.D. KNOTT.
- 3:15 **Mating behavior and paternity in wild woolly monkeys (*Lagothrix lagotricha poeppigii*): is mating success a good predictor of reproductive success?** L. ABONDANO, K.M. ELLIS, A. DI FIORE.
- 3:30 **Inter- and intra-group variation in infant transport in wild Weddell's saddleback tamarins (*Leontoebus weddelli*) in northwestern Bolivia.** L.M. PORTER, W.M. ERB.
- 3:45 **The development of male chimpanzee reproductive strategies.** R.B. REDDY, K.E. LANGERGRABER, A.A. SANDEL, J.C. MITANI.
- 4:00 **Response to selection on facial coloration in *Mandrillus sphinx*.** J.K. SCHAFER, A.D. GORDON, B. NGOUBANGOYE, J.M. SETCHELL.
- 4:15 **Female northern pig-tailed macaques (*Macaca leonina*) are more attracted to males with darker red anogenital coloration.** F.A. TRÉBOUET, S. MALAIVIJITNOND, U.H. REICHARD.

- 4:30 **Priority of Access Model is a Good Fit Despite the Occurrence of Following, an Alternative Mating Strategy in Wild Crested Macaques (*Macaca nigra*).** L.M. DANISH, A. PASETHA, M. AGIL, A. ENGELHARDT.
- 4:45 **Quantitative genetics of sexually-selected traits in male rhesus macaques.** C.M. KIMOCK, C. DUBUC, J.P. HIGHAM.
- 5:00 **Intergenerational Fitness Effects of Early Life Adversity in Baboons.** M.N. ZIPPLE, E.A. ARCHIE, J. TUNG, J. ALTMANN, S.C. ALBERTS.
- 5:15 **Social relationship quality vs quantity: Which is a better predictor of survival in female baboons?** F.A. CAMPOS, E.A. ARCHIE, S.C. ALBERTS.
- 5:30 **Male mutation bias is pervasive across primates.** L. HENRIQUES VISCARDI, V. RODRIGUES PAIXÃO-CÔRTEZ, G. REALES, T.H. WEBSTER, M. BORTOLINI, C. GUERRA AMORIM.
- 5:45 **What goes around: Mothers' birth condition influences daughters' age at first pregnancy and uterine size in the common marmoset (*Calithrix jacchus*).** J. RUTHERFORD, C. ROSS, D. LAYNE COLON, A. SILLS, T. ZIEGLER, S. TARDIF.

Session 43: Advancing the field: Movement ecology in the nonhuman primates

*Invited Poster Symposium.* Chair: Stephanie A. Poindexter.

Co-organizers: Julie A. Teichroeb, University of Toronto Scarborough.

## CC Room 22.

Research on nonhuman primate movement ecology spans a wide range of disciplines and physical anthropologists doing work in this area focus on diverse topics including sensory morphology, feeding ecology, foraging cognition, dispersal patterns, and group structure. Uncovering the mechanisms, patterns, and motivations for primate movement has emerged as a prominent topic of study over the past few decades. The movement ecology paradigm has helped to focus these research efforts by looking at the intrinsic motivations to move, the basic ability to physically move, where and when to move, and the broad range of external cues that inform movement decisions. It has become vitally important to understand movement processes as suitable habitat decreases and human populations increasingly driving wild primates to change the way they perceive and interact with their environment. In response to these changes and in ideal conditions, movement can determine the fate of individuals, the structure and dynamics of populations, communities, and ecosystems, as well as their evolution and diversity. This symposium was conceptualized to bring together physical anthropologists working on the various aspects of primate movement ecology to determine our current understanding of the internal state, movement capacity, navigational capacity, and environmental cues that facilitate primate movement. This interdisciplinary group utilizes diverse methods, equipment, and experiments, which can all be used to advance our understanding of movement ecology. It is our hope that this symposium will encourage more researchers to evaluate their ecological, social, and behavioral data from a movement perspective.

**Discussant: Julie Teichroeb.**

- 1 **Impediments to human bipedalism in tropical rainforests.** N.J. DOMINY, V.V. VENKATARAMAN.
- 2 **Moving through ecology: orangutan positional behavior in a mosaic habitat.** E.E. KANE, A. BLACKBURN, T. SUSANTU, C.D. KNOTT.
- 3 **Navigational demand and how it's linked to olfaction and spatial memory in primates.** S.A. POINDEXTER, R.M. DECAMP, E.C. GARRETT.
- 4 **Seeing the flowers for the trees: trichromacy provides food detection advantages for white-faced capuchins.** J.D. HOGAN, L.M. FEDIGAN, C. HIRAMATSU, S. KAWAMURA, A.D. MELIN.
- 5 **Where the Wild Things Are...and How They Get There: Bonobo, chimpanzee and human use of visual spatial information navigating in virtual reality.** F.L. DOLINS, C. MENZEL, K. JANMAAT, K. SCHWELLER, M. ALLRITZ, J. CALL.
- 6 **The Environment Beyond Points of Directional Change.** A. HOWARD, E. GURARIE, E. VISALBERGHI, P. IZAR, D. FRAGASZY, W. FAGAN.
- 7 **Dispersal decisions in monogamous owl monkeys (*Aotus azarae*): How ecological and social factors influence the timing of natal dispersal.** M.K. CORLEY, E. FERNANDEZ-DUQUE.
- 8 **Who Pays the Costs of Cohesion? Maintaining behavioral synchrony in baboon troops on the move.** M.C. CROFOOT, R. HAREL.
- 9 **Do primates really trapline?** T.L. KUMPAN, E.A. SMELTZER, W.D. AGUADO, A.Q. VINING, J.A. TEICHROEB.
- 10 **Sensory cues related to short distance foraging choices in a nocturnal, folivorous primate.** R. SAWYER, T. RANAIVOSON, D. WALKER, S. VAGLIO, K. NEKARIS, G. DONATI.

Session 44: From Pedestrian to Cerebral in the Pleistocene: A Symposium in Honor of Erik Trinkaus

***Invited Poster Symposium.*** Chair: Libby W. Cowgill.

Co-organizers: Sheela Athreya, Texas A&M University; John Willman, IPHES, Institut Català de Paleoecologia Humana i Evolució Social; Universitat Rovira i Virgili; Scott Maddux, University of North Texas HSC.

### **CC Room 23.**

This poster symposium celebrates the extraordinary contributions of Erik Trinkaus to Late Pleistocene paleoanthropology. A member of the National Academy of Sciences, Erik has spent the last forty-five years contributing knowledge foundational to contemporary understanding of Neandertal and early *Homo sapiens* evolution, functional anatomy, and paleobiology. His extensive and diverse publication record spans the last half million years of human evolution and almost every anatomical region of the body. His work is clearly and consistently unified by a deep commitment



to situating skeletal material in appropriate archaeological and behavioral contexts, evaluating fossil specimens within the broader scope of human variation, and focusing on population dynamics and evolutionary processes. Erik's authorship of over a dozen books and more than 250 articles and chapters includes numerous analyses of original fossil material such as the classic *The Shanidar Neandertals*, along with popular science books like *The Neandertals: Changing the Image of Mankind*. Further, in addition to his own research, Erik has been extremely successful in the education and training of students (chairing 16 dissertation committees and shaping the perspectives of countless other young academics) and championing the work of international anthropologists, especially those from developing countries. Thus, as Erik nears retirement, we honor not only his personal contributions to the field, but his inestimable impact on the academic careers of numerous students and close collaborators, both domestic and abroad.

**Discussants: Fred H. Smith, João Zilhão.**

- 1 **The making of a paleoanthropologist: The influences of Erik Trinkaus.** R. POTTS.
- 2 **A consideration of the 'anomalous' narial margin patterning in the Krapina Neandertal maxillae.** R.G. FRANCISCUS.
- 3 **Looking for Neandertal derived traits: new data from the Le Moustier 2 Neandertal neonate (Le Moustier, France).** B. MAUREILLE, C. PARTIOT.
- 4 **Another look at canine variation in Neanderthals.** D. GUATELLI-STEINBERG, G.V. CALHOUN, M. HUBBE.
- 5 **Paleobiology and Taphonomy of the Middle Paleolithic Neandertal Remains from Ciemna Cave, Southern Poland.** J.C. WILLMAN, B. GINTER, R. HERNANDO, M. LOZANO, K. SOBČYK, D. STEFAŃSKI, A. SZCZEPANEK, K. WERTZ, P. WOJTAL, M. ZAJĄC, K. ZARZECKA-SZUBIŃSKA, E. TRINKAUS, P. VALDENOWAK.
- 6 **The Evolution of Human Body Size and Shape.** C.B. RUFF.
- 7 **Surface area and volume of the body in Late Pleistocene *Homo*.** T.W. HOLLIDAY, B.M. KASABOVA.
- 8 **Genetic variation in body weight ontogeny and its contribution to body size sexual dimorphism in captive baboons (genus, *Papio*).** J.L. JOGANIC, F. SANTOS, L.A. COX, M.C. MAHANEY, J. ROGERS, J.M. CHEVERUD, A.G. COMUZZIE.
- 9 **Neanderthal thermoregulation: old ideas and new.** C. OCOBOCK, A. NICLOU.
- 10 **Professor Erik Trinkaus and paleoanthropological studies in China.** W. LIU, X. WU.
- 11 **Commingle skeletons in Cussac cave (Gravettian, Dordogne, France): Paleobiology and mortuary behaviors.** S. KACKI, I. DORI, P. GUYOMARC'H, E.M. SCHOTSMANS, V.S. SPARACELLO, S. VILLOTTE.
- 12 **Further insights on Late Upper Paleolithic (Epigravettian) funerary use of Arene Candide Cave (Liguria, Italy). New AMS dates and paleopathology.** V.S. SPARACELLO, I. DORI, S. ROSSI, A. VARALLI, J. MOGGI CECCHI, J. RIEL-SALVATORE, V. FORMICOLA.
- 13 **Neandertal oral health: new techniques and future directions.** S.A. LACY.

- 14 **Mortality and skeletal lesion profiles among Prehispanic Lower Pecos foragers of southwest Texas.** C.E. HILTON, M.D. OGILVIE.
- 15 **Scapular retroversion asymmetry and its correlates: New indicators of habitual upper limb activities.** L.W. COWGILL, S.D. MADDUX.
- 16 **A Symposium in Honor of Erik Trinkaus: Talk to the Hand.** W. NIEWOEHNER.
- 17 **Neandertal-Upper Paleolithic *H. sapiens* population dynamics.** L.L. SHACKELFORD, S.G. ATHREYA.
- 18 **How did the Neanderthal juxtamastoid eminence come into being although it does not exist?** M.S. PONCE DE LEÓN, C.P. ZOLLIKOFER.

Session Biological Anthropology of Brazilian populations – past and present  
45:

*Invited Poster Symposium.* Chair: Hilton P. Silva.

#### **CC Room 24.**

Physical Anthropology has been a recognized research field in Brazil since the end of the 19th Century when it was mostly involved with discussions about races, admixture, and the building of the Nation. Nevertheless, starting in the 1950's until the early 1990's, the field almost disappeared from academic institutions in the country, even though some individual researchers continued to work with themes related. As a holistic and dynamic field which, throughout its history, has responded to diverse theoretical currents and paradigms according to the various latitudes where it has been applied, biological anthropology has proven its importance. Nevertheless, until 2010 there was no formal training, whether at the undergraduate or graduate level, in physical/biological anthropology in Brazil. The objective of this session is to bring together representatives of the most important centers conducting investigations in the field of biological anthropology in the country, some of them in partnership with USA researchers. The session provides a broad spectrum perspective on how the field has been developing in the country, the types of studies conducted, from pre-historic to contemporary populations, and helps demonstrate that the field can have an important role in the comprehension and the search for solution to the distinct problems faced by the society.

**Discussant: Douglas Crews.**

- 1 **Biological anthropology in Brazil: Past and present perspectives.** H.P. SILVA.
- 2 **Runs of homozygosity and admixture dynamics in the African-derived Brazilian *quilombo* populations.** K. NUNES, R.B. LEMES, L. KIMURA, J.E. CARNAVALLI, R.C. MINGRONI-NETTO, P.A. OTTO, D. MEYER.
- 3 **Relationship among molecular markers, blood biochemistry, and anthropometry in Amazonian Native American populations.** I.G. DINIZ, H.P. SILVA, J.F. GUERREIRO.
- 4 **Infant condition and the timing of deciduous tooth emergence in the Brazilian Amazon.** J. SPENCE, D. GUATELLI-STEINBERG, B.A. PIPERATA, B. FLOYD, H.P. SILVA.

- 5 **Factors associated with cardiovascular diseases in men and women: epidemiological transition in traditional Brazilian African-derived communities (*quilombos*).** S.G. PAIVA, M.C. NOBREGA, M. KLAUTAU-GUIMARAES, L. MADRIGAL, A. RIVARA, S.F. OLIVEIRA.
- 6 **Chronic diseases in Amazonian populations: Socioepidemiology and biocultural perspectives.** A.K. SILVA, L.A. FIGUEIRAS, R.B. TAVARES, H.P. SILVA.
- 7 **Oral health in a rural population of the Brazilian Amazon: Implications for interpretation of dental caries in the past.** P. DA-GLORIA, B.A. PIPERATA, C. HOFFMANN, M. SIMIONATTO, R. OLIVEIRA, F.N. NOGUEIRA.
- 8 **Resilience of the hunter-gatherers of Lagoa Santa, Brazil: a new case of Paleoamerican late survival.** D.V. BERNARDO, P. DA-GLORIA, W.A. NEVES.

## Saturday, All day sessions.

Session Genetics

46:

*Contributed Poster Presentations.* Chair: Krithivasan Sankaranarayanan.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

5:30 **Odd number presenters stand by their posters.**

- 1 **Investigating the Phenotypic Consequences of Archaic Hominin Introgression on Modern Human Biology.** E. JAGODA.
- 2 **Diverse and distinct histories of admixture in East African Nilotic speakers.** R.L. RAAUM, D. ISABIRYE, E.I. MUNANURA.
- 3 **Genetic Research of Ancient Human Remains in the Central Plains during Yangshao Period.** J. LI, Y. ZHANG, H. ZHU, H. ZHOU.
- 4 **Exploring population origins and dispersals using ancient DNA at Chelechol ra Orrak, Palau.** J.H. STONE, C. KISIELINSKI, J. TACKNEY, S.M. FITZPATRICK, N. TING, D. O'ROURKE.
- 5 **Human Mitochondrial Diversity Across West New Guinea: The Origin and Expansion of Haplogroups Q1 and P3.** C.J. FUGINA, E.S. JELEN, M.C. MORAN, S.C. VELAZQUEZ, M. MONTES, C.A. ALMETER, C.N. RONEN, A.A. GUYON, R.M. GARRUTO, M. SHAMOON-POUR.
- 6 **The Genomic Landscape of the Peruvian Andes.** M.A. NIEVES-COLON, E. RAWLS, A. OBREGON-TITO, R. TITO, C. LEWIS, K. SANDOVAL MENDOZA, C.D. BUSTAMANTE, G.L. WOJCIK, C. GIGNOUX, J. BAKER, L. FEJERMAN, T. VIDAURRE, B. LIZARRAGA, V. RUBIN DE CELIS, A.C. STONE, A. MORENO-ESTRADA.

- 7 **The molecular consequences of migration in a regional Amazonian city.** R.E. DAVID.
- 8 **Biodistance Analysis of North and South American Populations.** J.R. STAMER, M. HUBBE.
- 9 **African Ancestry in the Americas: Perspectives on Afro-Puerto Rican Maternal Ancestry.** T. WINFUL, M.A. C. DELDUCCO, E. MUELLER, J. BENN TORRES, PHD.
- 10 **Sex-biased admixture and geographic mating structure shape genomic variation in Cape Verde.** K. BOBREK, S. BELEZA, A. GOLDBERG.
- 11 **A candidate gene approach to assessing phenotype/genotype correlations in the nasal complex.** N.E. HOLTON, T. WELK, L. MORENO-URIBE, T.R. YOKLEY, R.G. FRANCISCUS.
- 12 **The MZ SNP: A Xq27.2 region associated with prostate cancer is also associated with monozygotic twinning.** K. KELLY, S. BASHAR, K.B. CLANCY, H. HUANG, L. MADRIGAL.
- 13 **A newly generated whole genome of *Treponema pallidum* subsp. *endemicum* strain Iraq B: implications for reconstructing the evolutionary history of treponematosi.** Z. WANG, B.J. MOLINI, G.R. MILNER, S.A. LUKEHART.
- 14 **A complex genotype-phenotype map underlies the generation of genetic variation in murine molars.** C.C. ROSEMAN, R. GREEN, A. NEVES, C. PERCIVAL, L.K. DELEZENE, J.M. CHEVERUD, B. HALLGRIMSSON.
- 15 **A sample of HbAS African American football players differs significantly from a control African American football team in its mean weight and BMI. Is HbAS a benign condition in football?** D. WHITE, C.M. BALENTINE, C. FLANSBURG, R.W. GRIEGER, J. LUND, M. CIAMBELLA, E. GONZALEZ, E. CORIS, A.C. STONE, L. MADRIGAL.
- 16 **Heritability of the Body Composition and Blood Pressure association in ethnically distinct indigenous populations.** S. GHOSH, T. DOSAEV, J. PRAKASH, G. LIVSHITS.
- 17 **A haplotype-level analysis reveals adaptive polymorphic gene duplications in humans affecting pigmentation and hair morphology.** M. SAITOU, O. GOKCUMEN.
- 18 **Differential energy gain from saturated and polyunsaturated fats.** K. CHADAIDEH, R.N. CARMODY.
- 19 **Adiposity, leptin, and single nucleotide polymorphisms in Kansas Mennonites.** C. GERHOLD, M. CRAWFORD, M. MOSHER.
- 20 **Studying oral health status in Pre-Hispanic and Colonial indigenous individuals from Central Mexico through paleogenomics.** M.J. BRAVO LÓPEZ, V. VILLA ISLAS, A. SOLÍS GUZMÁN, E. CAMPOS MEJÍA, A. HERRERA MUÑOZ, J. GÓMEZ VALDÉS, M.C. ÁVILA ARCOS.
- 21 **Expression of the  $\mu$ -opioid receptor gene in the frontal cortex of a mouse model for the evolution of human endurance running.** N.Y. MAZUMDAR, J.D. POLK, T. GARLAND, JR., L.L. SHACKELFORD, J.S. RHODES.

- 22 **Using a Mouse Model to Study the Evolution of a Bipedal Trait: Characterizing the Regulatory Landscape of Muscles with Divergent MHC I Expression.** S.R. QUEENO, M. YOUNG, D. RICHARD, M.C. O'NEILL, T.D. CAPELLINI, K.N. STERNER.
- 23 **A spoonful of bacteria helps the gluten go down: Probing the human oral microbiome for evidence of recent adaptation to host diets enriched in wheat, barley, and rye.** C.K. LAPOSKI.
- 24 **Biogeographic study of human gut associated crAssphage suggests impacts from industrialization and recent expansion.** K. SANKARANARAYANAN, T. HONAP, S. SCHNORR, A. OZGA, C. WARINNER, C. LEWIS JR..
- 25 **Impact of modernization on human gut microbiome diversity on three islands of Vanuatu.** M. LI, K. GOWEN, A. ROOME, D. JACOBSON, N. PATEL, J.K. LUM, K. SANKARANARAYANAN.
- 26 **Polygenic Adaptation to Amazonian Rainforest.** C.M. COUTO-SILVA, K. NUNES, M. BORTOLINI, F.M. SALZANO, T. HÜNEMEIER.
- 27 **Revisiting Heterozygous Advantage for Phenylketonuria Carriers.** A.B. POTTER, M.J. COOPER.
- 28 **A novel composite evolutionary approach reveals *SPRR3* gene in the epidermal differentiation complex as a target of balancing selection in humans.** I. STARR, T. WILD, O. GOKCUMEN.
- 29 **The world-wide distribution of the C677T allele of the MTHFR gene.** L. REYES, F. GONZALEZ-HERNANDEZ, D. GODFREY, M. JEAN, M. BIDAL, L. MADRIGAL.
- 30 **Ancient Genomic and Epigenomic Simulation Using the epiPALEOMIX Pipeline.** C.E. BARRETT, J. KELLY.
- 31 **Microhaplotypes: New markers in Anthropological Genetics.** M.S. SCHANFIELD, R. HART, K. LONG, K. MADDELLA, C. WOOTEN, R. LAGACE, J. CHANG, F. OLDONI, K. KIDD, D. PODINI.
- 32 **Effects of domestication and selective breeding on coat coloration in alpacas through exon 4 analysis of agouti gene.** E.K. BLYSTONE.
- 33 **Using DNA to determine the species and geographic origins of elephant ivory discovered in a 16<sup>th</sup> century Portuguese shipwreck.** A. DE FLAMINGH, A. COUTU, S. CHIRIKURE, J. SEALY, R.S. MALHI, A.L. ROCA.
- 34 **An epigenetic measure of biological aging in rhesus macaques.** E.A. GOLDMAN, K.L. CHIOU, L.J. BRENT, M.J. MONTAGUE, M.L. PLATT, J.E. HORVATH, S. SAMS, K.N. STERNER, N. SNYDER-MACKLER.
- 35 **Stabilizing selection on bamboo lemur cyanide-detoxification enzymes suggests regulatory evolution.** M. LAUTERBUR, M.E. CHANEY, A.J. TOSI, P.C. WRIGHT.
- 36 **Repeatability of female odor preferences in mate choice.** L.A. KNAPP.
- 37 **Evolvability and Constraint in Traits of the Primate Vertebral Column with Respect to Functional Trait Complexes.** B.M. AUERBACH, E.R. AGOSTO.

- 38 **Estimating extinct primate vomeronasal traits using maximum likelihood ancestral state reconstruction methods.** R.M. DECAMP, E.C. GARRETT.
- 39 **The dynamic evolution of the xenobiotic-metabolizing cytochrome P450 enzymes (CYP1-3) among primates.** M.E. CHANEY, M.G. ROMINE, H. PIONTKIVSKA, A.J. TOSI.
- 40 **The evolution of human neutrophilia and the functional divergence of a bactericidal cell in primates.** J.F. BRINKWORTH, K. VAN ETTEN, P. BHATT, K. MCCLURE, M. WOO, N. VALIZADEGAN, S. GUNASEKERA, Y. SUAREZ, B. ALDRIDGE.

Session Education in Biological Anthropology  
47:

*Contributed Poster Presentations.* Chair: Briana Pobiner.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

- 1 **Does learning evolutionary theory within anthropology help students reason about human evolution?** E.P. BEGGROW.
- 2 **Engaging students in anthropology through the exploration of ancestry identity.** L.N. PEARSON.
- 3 **The use of bout's during activity decreases women's core temperature more than men's.** H.K. CHEYNEY KANE, C. WALL-SCHEFFLER.
- 4 **The Ethical Exhibition of Human Remains.** A. GABBARD.
- 5 **Exploring biological anthropology content on popular science YouTube channels.** D. SHAPIRO.
- 6 **Among elderly Kuwaitis social support buffers functional and physiological dysregulation.** K.A. ZNIDARSIC, A.N. EDES, Y. AL-KANDARI, D.E. CREWS.
- 7 **Disentangling and Disappropriating Science.** J. LUND, C.M. LEWIS, JR..
- 8 **Walking with hominins and chewing with lemurs in K-12 classrooms: Incorporating 3D digital repositories into state-specific lesson plans.** A.N. ROSSILLO, R.W. COOK, E.L. FULWOOD.
- 9 **Race science and its misuse of research in biological anthropology.** D.M. ADAMS, M.A. PILLOUD.
- 10 **Kenyan biology teachers' experiences teaching evolution.** B. POBINER, H. CHIRCHIR, J. MUNGA, M. GRANATA, H. FARKOSH.
- 11 **Effectively teaching primary literature comprehension in bioanthropology.** S. NEWELL.
- 12 **Metric and Non Metric Comparative Study of Sexual Dimorphism of the Zygomatic.** M.L. ORRAND, S. GARDNER.

- 13 **The sensitive camel and the wishing troll: Paint chips redefining arbitrary categories of skin pigmentation in anthropological education.** A. BIERNASKI, L. WILLIAMS.
- 14 **Virtual Reality Evolutionary Anatomy Lab (VREAL): Virtual lab spaces for instruction and collaboration.** A.P. VAN ARSDALE, J. TYNES, K. LUKOSIUTE, A. SIMONSON, S. COX.

Session Primate Craniodental Anatomy  
48:

*Contributed Poster Presentations.* Chair: Andrew Deane.

**CC Ballroom BC.**

8:00 **Setup.**

10:00 **Poster open.**

1:30 **Even numbered presenters stand by their posters.**

6:00 **Odd numbered presenters stand by the posters.**

- 1 **Virtual Dissection of Complex Masticatory Muscles with DiceCT.** R. SAAVEDRA, R. KILE, R.A. MENEGAZ.
- 2 **The evolution of gape and bite force potential in primates.** H. GLOWACKA, G.T. SCHWARTZ.
- 3 **Trabecular ontogeny of the mandibular condyle in callitrichids.** N.D. SIEGEL, C.J. VINYARD.
- 4 **Functional correlates of jaw shape diversity in platyrrhine sclerocarpic harvesters.** Z.S. KLUKKERT.
- 5 **The effects of chewing time on gonial morphology in the mammalian mandible.** S.M. MAGEE, S.E. ALAVI, F.R. FOSTER.
- 6 **Mandibular shape variation within hylobatid species is not consistent with genetic diversity.** J.M. ZICHELLO.
- 7 **Palatine morphological variation associated with diet in lemurs.** G.Y. GALDAMEZ, S.M. ZALESKI.
- 8 **Dental topography metrics from lemurs as ecometrics along spatial environmental gradients on Madagascar.** E.L. FULWOOD.
- 9 **The Impact of Food Texture Preference on Oral Processing in Modern Humans.** E.M. FRANKS, T.W. MOBERLY, M. JELTEMA, P.J. LUCK, J. BECKLEY, E. FOEGEDING, C.J. VINYARD.
- 10 **Do abrasion and attrition leave the same trace? A microscopic tooth wear study on chimpanzee molar wear facets.** J. STUHLTRÄGER, E. SCHULZ-KORNAS, R.M. WITTIG, O. KULLMER, K. KUPCZIK.
- 11 **Identifying dietary differences in howler monkey (*Alouatta* spp.) molars.** T. CIOAK.
- 12 **A comparison of cercopithecoid molar outlines using elliptical Fourier analysis.** A.C. KIM, F.L. WILLIAMS.
- 13 **Enamel extension rate patterns in the great apes.** C. KUFELDT.

- 14 **An assessment of the neurovascular structures of the trigeminal nerve and their relationship to tooth morphology in *Rattus sp.*, *Pithecia pithecia*, *Saimiri sciureus*, and *Chiropotes sp.*** C.B. YOAKUM, C.E. TERHUNE.
- 15 **Junk DNE: How Surface Simplification and Scanning Resolution Affect Measures of Dental Crown Sharpness.** P.E. MORSE, J.D. PAMPUSH, R.F. KAY.
- 16 **The use of enamel and dentine extension rates to estimate crown and root formation time and examine the M1 eruption process in wild chimpanzees.** M. MALONE.
- 17 **Is mountain life tougher? Examining differential maximum incisor bending and shearing strength in *Gorilla gorilla* and *G. beringei*.** L.N. AUSTIN, J.W. MOFFITT, A.S. DEANE.
- 18 **Variation in enamel formation front angles and enamel thickness in anterior and posterior cercopithecoid teeth.** L. OLDERSHAW, M. O'HARA, D. GUATELLI-STEINBERG, S. MCGRAW.
- 19 **Through thick and thin: Tooth crown strength and enamel thickness variation in apes and fossil hominins.** G.T. SCHWARTZ, A. MCGROSKY, D.S. STRAIT.
- 20 **A tale of two stresses: Comparing the relationships between maximum incisor shearing strength and maximum incisor bending strength and anthropoid diet.** A.S. DEANE, L.N. AUSTIN, J.W. MOFFITT.
- 21 **Assessment of dental microwear formation using a capuchin model: grit versus diet.** R.S. SCOTT, O. BOSS, L.R. DESANTIS, C. MARCIL, C. ROSS, A. SCHWARTZ, B.W. WRIGHT, K.A. WRIGHT, A. VAN CASTEREN, D.S. STRAIT.
- 22 **Incisor microwear textures in four genera of Sumatran primates.** L.K. DELEZENE, S.A. JEFFRESS, M.F. TEAFORD, P.S. UNGAR.
- 23 **Dental macrowear, diet and anterior tooth use in *Ptilocolobus badius* and *Colobus polykomos*.** G.V. CALHOUN, E.M. LAGAN, D. GUATELLI-STEINBERG, P.E. MORSE, W. MCGRAW.
- 24 **Metameric variation of upper molars in extant hominoids.** W. MORITA, N. MORIMOTO, R.T. KONO, G. SUWA.
- 25 **Understanding Canine Cranial Morphology: The Impact of Selection for Facial Reduction in Dogs.** M.C. SELBA, G.U. OECHTERING, H. HENG, V.B. DELEON.
- 26 **Bony labyrinth shape variation as a marker of prenatal stress and the maternal environment.** D.L. WARD, E. POMEROY, J.E. ROY, L.T. BUCK, J.T. STOCK, M.T. SILCOX, T. VIOLA.
- 27 **Get an eyeful of this: Gross anatomy and morphometrics of the squirrel monkey (*Saimiri*) interorbital region.** L.B. HALENAR-PRICE, B. SHEARER, C.E. TERHUNE, C. YOAKUM, S.B. COOKE.
- 28 **A unique pattern of serotonergic innervation in the human amygdala.** C.H. LEW, K.M. GROENIGER, K.L. HANSON, D. CUEVAS, D. GREINER, B. HRVOJMIHIC, U. BELLUGI, C.M. SCHUMANN, K. SEMENDEFERI.
- 29 **Correlations between Cranial Morphometric Variation and Climate in western South America.** B. HERRERA, M. HUBBE.



- 30 **Scaling of whole brain blood flow rate in marsupials and euarchontans.** A.R. HARRINGTON, L. LANGE-HODGSON, V. WEISBECKER, D.M. BOYER.
- 31 **Evolving the primate retina: using time to generate high visual acuity.** C.J. CHARVET, D.J. TINDAL-BURGESS.
- 32 **Interneurons of the anthropoid striatum: reorganization and computational considerations.** K.L. HANSON, C.H. LEW, B. HRVOJ-MIHIC, E. HALGREN, M. RAGHANTI, K. SEMENDEFERI.

Session Primate Ecology, Conservation and Genetics  
49:

*Contributed Poster Presentations.* Chair: Lisa Paciulli.

**CC Ballroom BC.**

8:00 **Poster setup.**

10:00 **Poster session opens.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

- 1 **Environmental predictors of *Propithecus* pelage variation.** A.N. SPRIGGS, B.J. BRADLEY, J.M. KAMILAR, A.D. GORDON.
- 2 **Comparing Evolutionary Models of Primate Hair Color Variation.** R.B. BELL, B.J. BRADLEY, J.M. KAMILAR.
- 3 **Colors of primate pelage: The independent evolution of sexual dichromatism in the primate order.** T.C. WILSON, J.E. LOUDON.
- 4 **Are there clade level differences in the sexual dimorphism of primate hair morphology?** J.M. KAMILAR, A.N. SPRIGGS, A. MAKSIMOSKI, B.J. BRADLEY.
- 5 **Exome Sequencing Reveals Patterns of Selection Across Brown Lemurs (Eulemur).** A.J. ZAMORA, T.H. WEBSTER, J.M. KAMILAR.
- 6 **The Influence of Breeding System and Group Size on the Probability of Extinction in Diurnal Lemurs.** F.M. MERCADO MALABET, L.T. KUMPAN, S.M. LEHMAN.
- 7 **Are we overestimating commensal species densities? A case study of the long-tailed macaque (*Macaca fascicularis fascicularis*).** M.F. HANSEN, V.A. NAWANGSARI, S. ELLEGAARD, M.M. MOELLER, F.M. VAN BEEST, N.M. SCHMIDT, M. STELVIG, C. TRAEHOLT, T. DABELSTEEN.
- 8 **Body temperature estimates for Bornean orangutans (*Pongo pygmaeus wurmbii*) from internal fecal temperature measurements.** F.S. HARWELL, R. GOTAMA, K.S. SCOTT, B. PHILP, C.D. KNOTT.
- 9 **Shifting Spaces: short-term home range patterns in white-handed gibbons in mosaic habitat in western Thailand.** M. SOBASZEK, L.E. LIGHT.
- 10 **Observation of visitors at a chimpanzee ecotourism site reveals opportunity for multiple modes of pathogen transmission.** D.B. GLASSER, T.L. GOLDBERG, J.M. ROTHMAN.

- 11 **Terrestrial tree hugging in a primarily arboreal lemur: a risky but effective thermoregulatory strategy.** C. CHEN-KRAUS, N.A. RAHARINORO, R.R. LAWLER, A.F. RICHARD.
- 12 **Occurrence of flame retardants, legacy and current use pesticides in primate habitat throughout Kibale National Park, Uganda.** T. STEINICHE, S. WANG, E. JOHNSON, M. VENIER, M. WASSERMAN.
- 13 **Environmental, but not social cues predict nest site selection and use in a communally breeding primate.** A.L. BADEN.
- 14 **The influence of anthropogenic forest edge on the social cohesion of mantled howler monkeys in Costa Rica.** J.R. ROSSO, A.L. SCHREIER, E.M. COGGESHALL, C. MERRIGAN-JOHNSON, L.M. BOLT.
- 15 **Assessing the impacts of natural disaster on primate habitat in Sulawesi, Indonesia.** N.B. GROW-BLONG.
- 16 **Modeling *Varecia* current and future habitat in eastern Madagascar.** A.N. MANCINI, T. MORELLI, A.B. SMITH, E. BALKO, C. BORGERSON, R. DOLCH, Z. FARRIS, S. FEDERMAN, S. HOLMES, M. IRWIN, R. JACOBS, S. JOHNSON, T. KING, S. LEHMAN, E. LOUIS, A. MURPHY, T.H. RATOLOJANAHARY, O. RAZAFINDRATSIMA, A.L. BADEN.
- 17 **Paleoclimatic legacies structure present-day mammal communities in the global tropics.** J. ROWAN, K.E. REED, L. BEAUDROT, A. ZAMORA, I.E. SMAIL, J.M. KAMILAR.

Session Hominin Evolution  
50:

*Contributed Poster Presentations.* Chair: Scott Williams.

**CC Ballroom BC.**

8:00 **Poster Setup.**

1:30 **Even number presenters stand by their posters.**

6:00 **Odd number presenters stand by their posters.**

- 1 **How much does size dimorphism in *Australopithecus afarensis* reflect changes in male or female body size?** J. PLAVCAN.
- 2 **Predicting glenohumeral range of motion from bone geometry *in silico*, with application to fossil hominins.** E.C. LEE, N.M. YOUNG, M.J. RAINBOW.
- 3 **Joint proportions in early hominins.** A.M. PRABHAT, C.K. MILLER, J.M. DESILVA.
- 4 **Assessing hominin hips using ilium cross-sectional shape.** Z. COFRAN, C. VANSICKLE, D. GARCÍA-MARTÍNEZ, C.S. WALKER, B. PIERCY.
- 5 **Evaluating the Significance of Hominin Femoral Variation.** L.H. EASON.
- 6 **New cranial capacity estimates for Sts 19 and Sts 25 (*Australopithecus africanus*).** R.C. MCCARTHY.
- 7 **A new interpretation of the anomalous dental modifications of Olduvai Hominid 1 (OH1), Tanzania.** R. HERNANDO, J.C. WILLMAN, M. MATU, I. CREVECOEUR.

- 8 **Ontogeny of vault shape in *Homo erectus* with implications for KNM-ER 42700.** K.L. BAAB, A. NESBITT.
- 9 **Morphological affinities of Plio-Pleistocene hominins and its phylogenetics implications: a phenetic multivariate exploratory analysis.** T.C. CAMPOS, D.V. BERNARDO, T.F. DE ALMEIDA.
- 10 **Revisiting Herto: New evidence and perspectives on *Homo sapiens* from Ethiopia.** Y. SAHLE, Y. BEYENE, A. DEFLEUR, B. ASFAW, G. WOLDEGABRIEL, W.K. HART, L.E. MORGAN, P.R. RENNE, J. CARLSON, T.D. WHITE.
- 11 **Anatomic and geometric morphometric assessment of the Herto 16/5 endocranium (Middle Awash, Ethiopia).** L.E. CIRILLO, D. DECHANT, R.S. JABBOUR, G.D. RICHARDS.
- 13 **The Krapina Neandertal Site: Using Dental Metrics To Determine Population Variability In Neandertals.** B.A. KEELING.
- 14 **Dental developmental patterns and tissue volume variation along the arcade in Neandertals and Upper Paleolithic humans.** P. BAYLE, T. COLARD, M. LE LUYER.
- 15 **Similarities and differences of femoral diaphyseal ontogeny in modern humans and Neanderthals.** N. MORIMOTO, M. PONCE DE LEÓN, L. GOLOVANOVA, V. DORONICHEV, T. AKAZAWA, O. KONDO, C. ZOLLIKOFER.
- 16 **New insight on the Neandertal pelvis: Virtual reconstruction of the pelvis of Regourdou 1 specimen.** R. RMOUTILOVA, J. BRUZEK, R. LEDEVIN, A. GÓMEZ-OLIVENCIA, C. COUTURE-VESCHAMBRE, T. HOLLIDAY, S. MADELAINE, J. VELEMÍNSKÁ, B. MAUREILLE.
- 17 **Crown shape analysis of the maxillary dentition of *Homo naledi*.** J.K. BROPHY, D.J. DE RUITER, L.R. BERGER.
- 18 **New associated immature postcranial remains of *Homo naledi* from the Dinaledi Chamber, South Africa.** D.R. BOLTER, M.C. ELLIOTT.
- 19 **An analysis of the trabecular morphology of the *Homo naledi* talus, and its inferred functional implications.** C.P. KASL, A.J. RAGNI, W.E. HARCOURT-SMITH.
- 20 **Another massive distal humerus of *Paranthropus boisei* from Koobi Fora, Kenya.** M.R. LAGUE.
- 21 **Hibernation, puberty and chronic kidney disease in hominins from Spain half a million years ago.** A. BARTSIOKAS, J. ARSUAGA.
- 22 **Effect of sampling bias in endocast volume comparisons between Neandertals and recent modern humans.** C. VANSICKLE, Z. COFRAN.
- 23 **Maxillary sinus growth and development in Neanderthals and *H. sapiens*.** F. LANDI, A. PROFICO, P. O'HIGGINS.
- 24 **Fluctuating sea levels in Australomelanesia and some shifting hypotheses about human population of Flores, Indonesia.** R.B. ECKHARDT, S. CHAVANAVES, K.J. HSÜ, M. HENNEBERG.

- 25 **A virtual assessment of the proposed suprainiac fossa on the early modern European calvaria from Cioclovina, Romania.** A.M. BOSMAN, K. HARVATI.
- 26 **Analysis of an isolated hunter-gathering population, the Pericú, and implications for the effects of isolation on hominin skeletal remains.** C.B. YOUNG, J. MANUEL ARGUELLES, B. YÁÑEZ.
- 27 **10,000 years of mandibular evolution in southern South America: Implications for morphological diversification.** L.P. MENENDEZ, M.L. SARDI, N.A. SCHEIFLER, M.E. GONZALEZ, P. MESSINEO, G.G. POLITIS.
- 28 **A developmental model of hominin brain evolution.** S.D. HURST, R.L. HOLLOWAY, L.M. KITCHELL, H.M. GARVIN.
- 30 **Using Bayes Theorem to Identify New Species in the Fossil Record.** J.K. SPEAR, J. SHAPIRO.

Session Paleopathology  
51:

*Contributed Poster Presentations.* Chair: Mant, Madeleine.

**CC Ballroom BC.**

- 1 **Cranial injuries in the Bronze Age sample from Bezdanjača cave, Croatia.** I. JANKOVIC, M. NOVAK.
- 2 **Violence and Geographic Fluidity: Using Incremental Strontium Isotopes to Track Geographic Residence Throughout the Life Course in Prehistoric Arequipa, Peru.** C.K. SCAFFIDI, G. KAMENOV, G. GORDON, C. TICA, R. ULLOA, K. KNUDSON, J. KRIGBAUM.
- 3 **Integrative archaeometrical and osteological approach suggests violent deaths for Dutch colonizers in 17<sup>th</sup> Century Northeastern Brazil.** A. CAMPELO DOS SANTOS, H. LAVALLE SULLASI, S. MONTEIRO DA SILVA.
- 4 **Reconstruction of intentional violence in the Central European Early Medieval: perimortem axe skull injuries at Pohansko-Břeclav.** M. BERNER, J. MACHÁČEK, V. SLÁDEK.
- 5 **Colonialism and Structural Violence: Implications for Childhood Physiological Stress and Mortality Risk.** C.J. GARLAND, L.J. REITSEMA.
- 6 **Similarities and differences in cranial trauma in high and low status cemeteries in Colonial Mexico City.** P. LYNCH, C. WILLERMET, E. MOES, H. EDGAR, C. RAGSDALE.
- 7 **Analysis of an American Heroine?: The Skeletal Remains from the Gravesite of “Captain” Molly Corbin.** E.A. DIGANGI.
- 8 **Nonspecific Stress and Age-at-Death in Colonial Period North Coast Peru.** M. PHILLIPS, H.D. KLAUS, D.H. TEMPLE.
- 9 **Demographic reconstruction of health and disease at the St. Lawrence County Poorhouse, Canton, NY.** M.L. MANT, M. PITRE, C. MCCARTHY, A. HALE.
- 10 **Comparative Analysis of the Health of Free Blacks in the Northeast, South and Southwest.** E.D. TURNER-BYFIELD.

- 11 **A Case of Maternal and Perinatal Death in the Spring and Autumn Period in Jinnan region of China.** T. HAN, S. YOU, S. RUAN, X. MAN, X. LIAO, A. WANG, S. YANG.
- 12 **Rich grave goods, bad health? The preliminary results of the bioarchaeological study of the Middle Bronze Age cremation burials from Jagodnjak, Eastern Croatia.** M. NOVAK, I. JANKOVIC, D. TRESIC PAVICIC.
- 13 **Skeletal trauma as an indicator of past living conditions in Medieval Cambridge.** J.M. DITTMAR, P.D. MITCHELL, C. CESSFORD, S. INSKIP, B. NEIL, I.K. SEALEY, J. ROBB.
- 14 **Stress in Greek Mother Cities and Colonies.** N.K. TUCHSCHERER.
- 15 **Mortuary based variation in early stress experiences at CA-CCO-138.** C.M. CHEVERKO.
- 16 **Relations between cultural perceptions of childhood and childhood stress in an ancient Greek colony.** M.R. KAYE, B. KYLE, S. VASSALLO, L.J. REITSEMA.
- 17 **Post-mortem Birth, Death in Childbirth, or Mortuary Practices? A Case Study From Bronze Age China.** A. SHULTS, R. MAO, H. WANG, I. YEH-HUI YUAN, S. JUENGST.
- 18 **Urbanizing Childhood: The Children of the Spring Street Presbyterian Church and the Changing Landscape of Lower Manhattan.** M.A. ELLIS.
- 19 **Never Done: A bioarchaeological study of women's work, task, and occupation in medieval Edinburgh, Scotland.** L.K. IDE, L. FIBIGER, C.Y. HENDERSON, C. PICKARD.
- 20 **EMPHASIS: Environmental Mismatch in Primates and Humans, Anthropogenic Impacts and Settings Survey.** A.R. ELLER, S. CANINGTON, R.M. AUSTIN, C.A. HOFMAN, S.B. SHOLTS.
- 21 **Reconstructing host immune status in acquired syphilis: a bioarchaeological and immunological approach.** M.E. DUNCANSON, M.K. ZUCKERMAN, S. DEWITTE, F. CRESPO.
- 22 **Assessment of pathological conditions found in Andean Holocene inhabitants of Cuncaicha rock shelter, Peru.** M. FRANCKEN, J. BEIER, H. REYES-CENTENO, K. RADEMAKER, K. HARVATI.
- 23 **Diagnosing SAPHO syndrome in human remains.** J. MARGOLIS, M. HUBBE, M.M. QUINN.
- 24 **Macroscopic analysis of periosteal new bone in human long bones.** E. FRAUENHOFER.
- 25 **A probable case of cranial osteopenia in aboriginal societies from northern Argentina.** H. DRUBE, S. MARTÍNEZ, E. SILVERA, S. SALCEDA, G. LAMENZA.
- 26 **Proximate and Ultimate Causes of Rising NCD Mortality in the Mississippi State Asylum (1855-1935), Jackson, MS.** A.C. DAFOE, M.K. ZUCKERMAN, N.P. HERRMANN, A.M. PLEMONS, B.N. HIGGS.

- 27 **Oral health and osteoarthritis: impacts from social and environmental variation among Iron Age steppe groups of southern Siberia and Inner Asia.** J.T. ENG, M. MACHICEK.
- 28 **Osteoarthritis and osteophytosis in the vertebral column in two prehistoric populations from the semi-arid north of Chile.** D.K. JULIEN, K.M. RAYMOND.
- 29 **Back-breaking poverty: Schmorl's nodes in institutionalized and impoverished populations in the late 19<sup>th</sup> and early 20<sup>th</sup> century United States.** L.A. TREMBLAY.
- 30 **A Study on Spondyloarthritis of Individuals from Taosi North Cemetery.** X. MAN, S. RUAN, P. MU, X. LIAO.
- 31 **The role of social status in spinal degenerative joint disease outcomes: Evidence from Medieval Villamagna, Italy (800-1450 AD).** K.M. KINKOPF, S.C. AGARWAL, C. GOODSON, F. CANDILIO, A. COPPA, M. RUBINI.
- 32 **Development of a Radiological Checklist for Differential Diagnosis of Cancer and Neoplastic Disease in Mummified Human Remains.** J. WILLOUGHBY, A. NELSON.
- 33 **A bioarchaeology of care case study: Possible Juvenile Rheumatoid Arthritis from 14th-15th century Transylvania.** K.A. VEROSTICK, K.M. PADULA, D.N. WILLIAMS, Z. NYARADI, A. GONCIAR, J.D. BETHARD.
- 34 **Severe skeletal lesions associated with a documented case of juvenile leukemia.** J. MEYERS, E. GOODERHAM, L. MARINHO, H. NAHAL, K. NICHOLS, D. O'NEILL, L. SPAKE, H.F. CARDOSO.
- 35 **Physical (in)activity and the etiology of osteoarthritis.** I.J. WALLACE, G. RIEW, R. LANDAU, N.B. HOLOWKA, A.M. BENDELE, A.J. GRODZINSKY, E.H. FRANK, D.E. LIEBERMAN.
- 36 **The importance of age-at-death in orbital roof lesion analysis.** B. GARDNER, T. JAKOB.
- 37 **Arthropathic changes in the human skeletal remains from the Eastern Zhou China.** K. PECHENKINA, W. FAN.

Session Skeletal Biology: Growth and Development  
52:

*Contributed Poster Presentations.* Chair: Seselj, Maja.

**CC Ballroom BC.**

**8:00 Poster Setup.**

**1:30 Even numbered presenters standby their posters.**

**6:00 Odd numbered poster presenters stand by their posters.**

- 1 **Exploring age-related variations during calcaneal growth.** G. GABANINI, C. FIGUS, R. SORRETINO, N.B. STEPHENS, M.G. BELCASTRO, W. HARCOURT-SMITH, T.M. RYAN, S. BENAZZI.
- 2 **The application of histomorphometry to puberty in the archaeological record.** J.A. DOLDING-SMITH, R. PITFIELD, C. DETER, P. MAHONEY.

- 3 **Childhood growth, cessation, and recovery: Links between lines of growth arrest and bone quantity.** T.R. VALLEROY, L.W. COWGILL.
- 4 **Examination of nutritional, endocrinal, and metabolic effects on skeletal development and maturation.** K. REUSCH, J. GUERRERO.
- 5 **Sex-specific cervical vertebral growth in height & depth: A study using computed tomography.** C.A. MILLER, S. HWANG, M.M. COTTER, H.K. VORPERIAN.
- 6 **Bioarchaeological Evidence for Canalization in Subadult Body Size and Growth, Colonial Lambayeque Valley, Peru.** V.M. GARCIA, D.H. TEMPLE, H.D. KLAUS, J.A. THOMAS, S.N. BALL.
- 7 **Exploring age-related variations during talar growth.** C. FIGUS, N.B. STEPHENS, R. SORRENTINO, E. BORTOLINI, L.M. SCALISE, G. GABANINI, M. ROMANDINI, F. LUGLI, S. ARRIGHI, F. BADINO, G. MARCIANI, G. OXILIA, D. PANETTA, M.G. BELCASTRO, W. HARCOURT-SMITH, T.M. RYAN, S. BENAZZI.
- 8 **Timing is everything: Implementing a Life Course Perspective to Investigate Developmental Origins of Health and Disease in a Medieval Italian Skeletal Sample.** P. BEAUCHESNE, T. TROMBLEY, S.C. AGARWAL, K. KINKOPF, C. GOODSON, F. CANDILIO, A. COPPA, M. RUBINI.
- 9 **Insulin and Energetic Regulation of Skeletal Growth.** V.A. TOBOLSKY, J. HOLLANDER, T.D. CAPELLINI, L. ZENG, D.E. LIEBERMAN.
- 10 **Skeletal growth in wild chimpanzees: urinary bone biomarkers capture age variation in bone turnover.** A.A. SANDEL, M. ARPONEN, I.R. CLARK, S. TUOMI, K.K. IVASKA.

Session Skeletal Biology: Human Variation  
53:

*Contributed Poster Presentations.* Chair: Holt, Brigitte.

**CC Ballroom BC.**

8:00 **Poster Setup.**

1:30 **Even numbered presenters standby their posters.**

6:00 **Odd numbered poster presenters stand by their posters.**

- 1 **Tracing Racial Formations: Camper's, Blumenbach's, and Morton's Skulls and the Construction of Race in Anthropology.** P. MITCHELL.
- 2 **Tympanic dehiscence: Its prevalence and expression in Pacific Northwest Native crania.** G.L. TASA.
- 3 **Impacts of Thoracic Kyphosis Relative to the Midfacial Skeleton.** K.L. CEUNINCK, T. TRAN, A. ENGEL, W. SENSACOVIC, J. STARBUCK.
- 4 **Geographic variation in long bone growth and age estimation of juvenile skeletal remains.** H.F. CARDOSO, C. PRIMEAU, L. HUMPHREY, L. HARRINGTON, E. HOLLAND, L. RIOS, M. HOOGLAND, L. SPAKE, J. NELSON, E. GOODERHAM.

- 5 **Assessing craniofacial variation and sexual dimorphism in a skeletal sample from medieval Prussia.** C.S. PRITCHARD, A. ARIEL GRUENTHAL-RANKIN, A. KOPERKIEWICZ, M. POLCYN, M. RAMSIER.
- 6 **A multi-method approach to evaluate the presence of non-local individuals at the prehistoric Schild site in western Illinois.** A.R. THOMPSON, K.M. HEDMAN, M.A. FORT, S.C. DENT, D.C. COOK.
- 7 **Temporal Rift: Gene Flow or Genetic Drift? A case study of Korean Joseon Dynasty (1392-1910) and Modern (post-1910) Populations.** K.I. HARRINGTON, C.J. BAE, U. LEE, E. WOO, S. AHN, K. HU.
- 8 **Diachronic changes in craniofacial morphology among the Middle-Late Holocene populations from Hehuang region, Northwest China.** L. HE, D.H. TEMPLE, M. WANG, Q. ZHANG, W. LIU, N.V. CRAMON-TAUBADEL.
- 9 **3D Morphometric Analysis of Cranial Variation at the Egyptian Colonial Site of Tombos in Nubia.** M.R. BUZON, M.G. TORQUATO, E.R. OTÁROLA-CASTILLO.
- 10 **The future of craniometrics in archaeology?: A focus on diversity.** S.A. PONIROS.
- 11 **Diversity in Tudor England: Exploring Origins and Ancestry in the Crew of Henry VIII's flagship, the Mary Rose.** K.E. FAILLACE, J. SCORRER, R. MADGWICK.
- 12 **Modern evidence of femoroacetabular impingement: implications for interpretations in the archaeological record.** A.B. LAWRENCE, S. TOWNSLEY, C.V. WARD, B.D. CRIST, D.L. DUREN.
- 13 **In Service to the Sultan: Biological affinity analysis of Vlach Ottoman vassals from southern Croatia.** K. ALLEN, M. ŠLAUS, A. ADAMIĆ HADŽIĆ, N. VON CRAMON-TAUBADEL.
- 14 **Sexual Dimorphism of Cranial Fluctuating Asymmetry in a Historic Hispanic Population.** R.M. MELORO, J.T. HEFNER, M. HEILEN, V.B. DELEON.
- 15 **Sex differences in the patterning of age-related bone loss in the human hallux metatarsal in Post-medieval rural and urban populations.** L.A. WILSON, I. DE GROOTE, L.T. HUMPHREY.
- 16 **Patterns of cranial morphological diversity among peoples of African descent.** A.S. CUNNINGHAM, V. BURKE DELEON.
- 17 **Lower mechanization levels are associated with increased age-related limb bone strength in European skeletal samples.** B. HOLT.
- 18 **Diachronic change in the Holocene Baltic head: the effects of farmed and aquatic foods on skull and tooth morphology.** M.B. RIVERA, G. ZARIÑA, J.T. STOCK.
- 19 **Osteological development of the foot during the Medieval to Post-Medieval transition.** M.E. ALBEE.
- 20 **Preliminary insights into human femoral bone remodelling at Late Bronze Age multiple burials from Iran.** R. NASERI, J.J. MISZKIEWICZ, T.J. STEWART, A. SOŁTYSIAK.
- 21 **Variation in Long Bone Diaphyseal Morphology in Coastal and Inland Hunter-Gatherers from Prehistoric Alaska.** E.R. ROSA, D.H. TEMPLE.



- 22 **Cortical Defects of the Distal Femur in Pacific Northwest Natives.** J. VOGEL.
- 23 **Comparison of eight- and four-muscle model for assessment of upper limb muscle activity during cereal grinding.** M. STRUŠKA, M. HORA, V. SLÁDEK.
- 24 **A new method for obtaining tibial torsion in living humans.** A.S. MARSHALL, M.A. SCHRANK, J.S. WOLLMANN, L.T. GRUSS.
- 25 **Midline Shifts in Modern Populations: Comparison of Migrants and a Donated Skeletal Collection.** K.E. HELGESON, C.C. SIEGERT, C.P. MCDANELD, N.P. HERRMANN, M. SPRADLEY, M.D. HAMILTON.
- 26 **The Influence of Habitual Activities and Lifelong Occupations on Morphological Measures of Skeletal Robusticity.** L. BLIZZARD, H. DEAN, H.E. HORBALY, M. HUBBE.
- 27 **The influence of occupation, habitual activity, and SES on osteometric variation in modern humans.** H.E. HORBALY, M. HUBBE.
- 28 **Complex Clavicles: A novel method for landmark collection on structures lacking clearly defined features.** D.E. EHRLICH, B.A. PATEL, D.J. GREEN.
- 29 **Prediction of humerus length from the insertions of pectoralis major and the deltoid.** O.M. PEARSON, E.C. HILL.
- 30 **Introduction and Major Findings: The Backbone of Europe: Health, Diet, Work, and Violence over Two Millennia.** C.S. LARSEN, R.H. STECKEL, C.A. ROBERTS, J. BATEN.
- 31 **Proliferative periosteal reactions: assessment of trends in Europe over the past two millennia.** C. MARQUES, V. MATOS, N.J. MEINZER.
- 32 **Paleodemography of the Hamingmangha Site - a Neolithic Settlement Abandoned after a Disaster.** Q. ZHANG, Q. WANG, H. ZHU, P. MU, S. RUAN, S. YOU, N. OTGONTAMIR, Y. WANG, T. HAN.
- 33 **Artificially deformed skulls from Da'an Site – Earliest Evidence and Longest in situ Practice during the Neolithic Age.** Q. ZHANG, Q. WANG, Q. ZHANG, X. SUN, H. CUI, Z. ZOU, P. LI, J. LI.
- 34 **The Developmental Origins of Health and Disease: Early Life Health Conditions and Adult Age at Death in Europe.** R.H. STECKEL, C.A. ROBERTS.

## **Saturday, Morning sessions.**

Session (AAAG-AAPA-AAA-HBA session) Interpreting and communicating genetic variation in 2019: a conversation on race

*Invited Podium Symposium.* Chair: Jennifer A. Raff.

Co-organizers: Jennifer Raff, University of Kansas.

## **CC Ballroom A.**

New findings regarding genetic variation in contemporary and ancient human populations have led to increasingly prominent discussions about the nature and meaning of race. In the last year, these discussions have taken on a new urgency, as research from genomics and behavioral genetics has been cited as evidence for the “naturalness” of traditional racial categories not just by white nationalist groups, but also public intellectuals and political leaders. The explosion in popularity of personal ancestry testing brings discussions of the meaning of biological ancestry to the dinner table in a significant number of households. Results from genetic ancestry tests are also now being used in the criminal justice system to catch criminals, to identify relatives separated by United States immigration enforcement, and to apply for membership in tribal nations. It is crucial that scientific voices are part of these discussions.

Anthropological geneticists have long been at the forefront of these issues, as they are experienced not only in directly documenting patterns of genetic variation, but also in bridging the disciplines of population genetics, anthropology, and history to interpret these data in a broad context. This session, co-sponsored with the AAA will bring together leading researchers and science communicators to share their latest findings with respect to human variation and to critically examine how we conceptualize race in different contexts. Recognizing that these discussions frequently filter into the public sphere in ways that may be unanticipated by researchers, we will also address what it means to conduct research in human variation in a time when it is subject to scrutiny on social media. A secondary focus of the symposium will focus on effective approaches for communicating our work with different audiences: our peers in biological anthropology, scientists from other disciplines, the media, political groups, and the general public.

**7:55 Introduction: Jennifer Raff.**

**8:00 Genes, race and identity: a brief history.** A.D. RUTHERFORD.

**8:15 Human races owe their reality to inaccurate historical concepts of variation not genes.** N.G. JABLONSKI.

**8:30 The Role of Black Feminist Theory in Critiquing Scientific Practices and Concepts of Race.** R.J. WATKINS.

**8:45 Unwinding the Triple Helix: Race, Sex, and History in Population Genomics.** R.W. SMITH.

**9:00 Beyond race: Functional consequences of human genetic variation within the human population.** O. GOKCUMEN.

**9:15 Translating unique variants: the classroom, the courtroom, and the dinner table.** A.W. BIGHAM.

**9:30 Hidden in plain sight: the persistence of racemaking in contemporary population genomics.** D.A. BOLNICK.

**9:45 New Digs: Revisiting Paleoanthropology in the Genome Editing Era.** K.O. FOX.

**10:00 BREAK.**

**10:30 Genetic Astrology.** M.G. THOMAS.

- 10:45 **Genetic discourse and public spaces: the struggle to keep DNA from becoming race.** L.C. SPRINGS, J.F. GARBER, D.A. BOLNICK.
- 11:00 **Decolonizing science communication by telling regional stories.** L. WADE.
- 11:15 **Scientific Racism: From Dissident Professionals to Citizen Science.** A. PANOFISKY.
- 11:30 **Reconciling past injustices; building a future in African American genomics.** F.L. JACKSON.
- 11:45 **Discussant: Augustín Fuentes.**

Session Bioarchaeology and Forensic Anthropology: Shared Applications  
55:

*Invited Podium Symposium.* Chair: Katelyn Bolhofner.

**CC Room 26 C.**

- 8:00 **Ageing Methods and Population Structures: Does Transition Analysis Call for a Re-examination of Bioarchaeological Data?** M.A. CLARK, A. SIMON, M. HUBBE.
- 8:15 **Interpreting skeletal growth in the past: Error and estimation of childhood growth in historic African American communities.** C.A. WOLFE, N.P. HERRMANN.
- 8:30 **Age Indicators Reveal Population Information: A New Computational Framework for Estimating Ancestry from Pubic Symphyseal Shape.** B.F. ALGEE-HEWITT, J. KIM.
- 8:45 **Validation of the auricular surface method for sex estimation in non-adult human remains.** A. SANTOS, Á. MONGE CALLEJA, C. ARANDA, L. LUNA.
- 9:00 **Near-Infrared Spectroscopy to Predict Collagen Yield.** C.M. RYDER, M. SPONHEIMER, S. TALAMO, H. FEWLASS, E. SMITH, W.J. PESTLE.
- 9:15 **From flesh to mesh: Bodies as maps in 3D GIS.** J. WHITE, J. POUNCETT, R. SCHULTING.
- 9:30 **Photogrammetry in the field: Visualizing pathological lesions in a case of metastatic carcinoma from Antiochia ad Cragum, Turkey.** M.K. MOORE, E. HAMMERL, B. KREIMER, M. HOFF.
- 9:45 **Skeletal element independence and implications for quantification.** V. SGHEIZA.
- 10:00 **BREAK.**
- 10:30 **The Epidemiology of Longevity and Behaviour - Evidence from the skeleton and its value in Human Identification.** A.S. LA VALLEY, L. MCNERN, S. VASSALLO, X. KYRIAKOU.
- 10:45 **Restructuring our idea of individual function and community participation: The ICF model in paleopathology.** L. COLLIER, L. LOWE, C. VILLA.
- 11:00 **Traumatic predictors of femicide: A forensic anthropological approach to domestic violence.** M.J. DAVID, H. WALSH-HANEY.
- 11:15 **A Push for Trans-inclusive Language in Forensic Anthropology.** F.A. BOUDERDABEN.

Session Primate Diets and Foraging Behavior  
56:

**Contributed Podium Presentations.** Chair: Anna Nekaris.

**CC Room 25.**

- 8:15 **The ontogeny of termite gathering among chimpanzees in the Goulougo Triangle, Republic of Congo.** S. MUSGRAVE, E. LONSDORF, D. MORGAN, C. SANZ.
- 8:30 **Bonobo (*Pan paniscus*) dietary diversity: testing fallback food models.** A.J. HICKMOTT, M.L. WAKEFIELD, M.T. WALLER, C.M. BRAND, F.J. WHITE.
- 8:45 **The dietary niche of blue, red-tailed and hybrid monkeys (*Cercopithecus mitis*, *C. ascanius*, and *C. mitis x C. ascanius*) in Gombe National Park, Tanzania.** S.H. CRAWFORD, K.M. DETWILER.
- 9:00 **Feeding and foraging behavior of chacma baboons (*Papio hamadryas ursinus*) in a temperate and anthropogenically-altered habitat in South Africa.** N.W. ELLWANGER, T.Q. BARTLETT.
- 9:15 **Foraging in a landscape of fear: chacma baboons (*Papio hamadryas ursinus*) in the anthropogenic habitats of Hemel-en-Aarde Valley, South Africa.** A.L. ELLWANGER, J.E. LAMBERT.
- 9:30 **Digestive and sensory adaptations for the grass-eating niche: Insights from the gelada (*Theropithecus gelada*) genome.** M.C. JANIYAK, K.L. CHIOU, A. LU, T.J. BERGMAN, J.C. BEEHNER, N. SNYDER-MACKLER, A.D. MELIN.
- 9:45 **Individual Variation in Long-Tailed Macaque (*Macaca fascicularis*) 'Robbing and Bartering' Practices at Uluwatu Temple, Bali.** J.V. PETERSON, A. FUENTES.
- 10:00 **BREAK.**
- 10:30 **I see, you smell: interspecific variation in sensory use for fruit evaluation among sympatric New World monkeys.** C.C. VEILLEUX, C. HIRAMATSU, S. WEBB, F. AURELI, C.M. SCHAFFNER, S. KAWAMURA, A.D. MELIN.
- 10:45 **Fecal isotopes as indicators of weaning and diet in wild Bornean orangutans.** C.D. KNOTT, B. CROWLEY, M. BROWN, T. SUSANTO.
- 11:00 **The role of spatial memory as it relates to nutritional balancing in Bornean orangutans (*Pongo pygmaeus wurmbii*).** S.E. ALAVI, E.R. VOGEL.
- 11:15 **Nutrient goals of wild Bornean orangutans at Gunung Palung National Park: a case for nutrient balancing.** A.L. DIGIORGIO, C.D. KNOTT.

Session Diet, Ecology and Behavior in Human Evolution  
57:

**Contributed Podium Presentations.** Chair: Amy Rector.

**CC Room 26 C.**

- 2:30 **Intra-annual variation in diets of Plio-Pleistocene papionins from Kenya.** S.A. BLUMENTHAL, T.E. CERLING, K.L. CHRITZ, J.A. LEE-THORP, F. MANTHI.
- 2:45 **Differences in dietary habits between papionins and hominins from the Shungura Formation, Ethiopia: evidence from an improved Dental Microwear Texture**

- Analysis based on surface sampling on phases I and II molar facets.** F. MARTIN, C. PLASTIRAS, A. KALLEND, A. FRANCISCO, J. BOISSERIE, G. MERCERON.
- 3:00 **Morpho-functional traits of the mandible suggest no hard food adaptation in the hominin lineage.** T.M. KAISER, J. MARCÉ-NOGUÉ, T.A. PÜSCHEL, A. DAASCH.
- 3:15 **Evidence of *Macrotermes* termites within the *Zinjanthropus* horizon at Olduvai Gorge, Tanzania.** J. LESNIK, R. O'MALLEY, A. MABULLA, E. BAQUEDANO, M. DOMINGUEZ-RODRIGO, C. MAGILL.
- 3:30 **ED-XRF study of Oldowan artifacts documents raw material selection and transport through time on the Homa Peninsula, Kenya.** E.M. FINESTONE, T.W. PLUMMER, D.R. BRAUN, P. DITCHFIELD, J.S. REEVES.
- 3:45 **Neanderthal Hypercarnivory Revisited – Experimental Study of  $\delta^{15}\text{N}$  Shifts in Dietary Items Produced by Various Cooking Techniques.** K.K. FOECKE, A.S. BROOKS, C. FRANCE.
- 4:00 **Putrid, fermented, spoiled, decayed, let's call the whole thing "off": consumption of putrid meat by Neanderthals.** M.M. BEASLEY, J. LESNIK, A. PERRI.
- 4:15 **A review of prehistoric cannibalism in Europe: choice or necessity?** S.M. BELLO, E. HOWE, J. COLE.
- 4:30 **Persistence hunting in Levant: Both Neandertals and modern humans could run down a horse.** M. HORA, H. PONTZER, V. SLÁDEK.
- 4:45 **Tales teeth tell: Wintertime stress, nursing, and lead exposure in Neanderthal children.** T.M. SMITH, C. AUSTIN, D.R. GREEN, R. JOANNES-BOYAU, S. BAILEY, D. DUMITRIU, S. FALLON, R. GRÜN, H.F. JAMES, M. MONCEL, I.S. WILLIAMS, R. WOOD, M. ARORA.
- 5:00 **Cranial trauma prevalence in Neanderthals and early Upper Paleolithic modern humans.** J. BEIER, N. ANTHES, J. WAHL, K. HARVATI.
- 5:15 **Ecological niche models of human land use in Late Pleistocene Southeast Asia suggest both abiotic and biotic variables influenced human dispersal.** A.J. ZACHWIEJA, F. DEMETER, A. BACON, T. NGUYEN, A. NGUYEN, K. WESTAWAY, P. DURINGER, J. PONCHE, P. SICHANTHONGTIP, T. SAYAVONGKHAMDY, T.E. DUNN, L.L. SHACKELFORD.
- 5:30 **Paleoenvironmental studies Tor Hamar, Southern Jordan: Early modern human behavioral adaptability during MIS 3.** M. BELMAKER, H. BOCHERENS, Y. NAITO, H.D. O'BRIEN, C. WISSING, T. TAMURA, S. KADOWAKI.
- Session 58: Minimally Invasive Biomarkers in Human Population Biology Research: State of the Science and Future Directions

*Invited Poster Symposium.* Chair: J. Josh. Snodgrass.

Co-organizers: J. Josh Snodgrass, University of Oregon; Geeta Eick, University of Oregon.

## **CC Room 22.**

Biomarkers can provide objective measures of health, facilitate the identification of physiological mechanisms through which humans adapt to environmental stressors, and allow the mapping of processes through which social and cultural factors get under the skin to shape human development, behavior, and health. The expansion of ‘field-friendly’ techniques has allowed researchers to measure an array of biological parameters in population-based studies using sample types such as saliva, urine, hair, feces, and finger prick blood collected onto filter paper. Despite significant progress in the development of biomarkers for various minimally invasively collected sample types, however, several challenges have impeded their widespread adoption in biological anthropology and related disciplines. This invited symposium summarizes the state-of-the-science on minimally invasive biomarkers, presents insights obtained from recently validated markers, and charts a course for the future. The ‘Methods’ posters survey current biomarker techniques for measuring various physiological or health parameters, such as immune function, bone turnover, and cancers. Biomarker data can provide valuable insights into important evolutionary and biocultural questions, which will be discussed in the set of posters dealing with ‘Application to Key Theoretical Questions in Evolutionary Biology, Biocultural Anthropology, and Epidemiology’. These focus attention on a diverse array of applications such as documenting physiological adaptation, understanding transgender health, and detailing environmental contributors to aging. In ‘Biomarkers: Challenges and Solutions in Statistical Analysis’, posters detail the complexity of diurnal biomarker sampling and examine how best to make use of longitudinal study design and simultaneous sampling of multiple biomarkers. Finally, two posters consider ‘The Future of Minimally Invasive Biomarkers’ through their examination of point-of-care devices for data collection and providing potentially medically important information to study participants and the future technologies that have the potential to revolutionize the field of minimally-invasive biomarker research.

**8:00 Opening Remarks: J. Josh Snodgrass.**

**Discussant 2: Peifeng Hu, Perspective from Demography, Epidemiology, and Biomedicine.**

**Discussant 1: Thom McDade, Human Biology and Biocultural Anthropology Reflections.**

**Discussant 3: Vicky M. Oelze, Perspective from Archaeology, Biological Anthropology, and Primatology.**

- 1 DBS 2.0: Renewed investment in methods development of biomarkers from dried blood spots. J. SNODGRASS, G. EICK, S.S. URLACHER.**
- 2 Human Eco-immunology in the Field: Measuring multiple dimensions of immune function with minimally invasive, field-adapted techniques. A.D. BLACKWELL, A.R. GARCIA.**
- 3 Measuring attack on self: The current state of minimally invasive biomarkers for autoimmunity. T.J. CEPON-ROBINS.**

- 4 **The long, twisting road: searching for biomarkers of chronic psychosocial stress.** J.A. DECARO.
- 5 **Life history insights from dried blood spot-based measurement of bone turnover markers.** M.J. DEVLIN, G.N. EICK, J. SNODGRASS.
- 6 **Current and future applications of minimally-invasive biomarkers in the detection and treatment of various types of cancers.** A.M. DELOUIZE, F.A. ABAR, G. EICK, J. SNODGRASS.
- 7 **Human reproductive hormone measures: Methodological considerations and anthropological importance.** T.E. GILDNER.
- 8 **Telomere length analysis from minimally invasively collected samples: promises and pitfalls.** P.H. REJ, D.T. EISENBERG.
- 9 **The Milky Ways: Studying hormones, growth factors and immune function as normal human biological variation in human milk.** E.A. QUINN.
- 10 **Hormones from noninvasively collected samples to assess physiological responses to social, environmental and anthropogenic stressors in nonhuman primates.** S. CHOWDHURY, J.L. BROWN, L. SWEDELL.
- 11 **Minimally invasive biomarkers in evolutionary anthropology: Tools for understanding human variation, adaptation, and developmental plasticity.** S.S. URLACHER.
- 12 **The Science of Biomarkers and the Nuance and Noise in Biocultural Data.** R.G. NELSON.
- 13 **Key questions and future directions: Integrating biomarkers to understand (trans) gender experience and health disparities.** L. DUBOIS, R. JUSTER, J. GIBB, T. WALKER, S.I. POWERS.
- 14 **Developmental origins of health disparities: Early life adversity and DNA methylation in childhood.** Z.M. THAYER, C. WALKER, K. LY, E. MARKS, S. MORTON.
- 15 **The use of biomarkers to answer questions about the evolution of mind and behavior: Integrating human biology, human behavioral ecology, and evolutionary psychology.** L.S. SUGIYAMA, J.M. SCHROCK.
- 16 **Collecting Biomarkers of Chronic Diseases of Ageing in Field Settings.** B.C. TRUMBLE, A.R. GARCIA, D.K. CUMMINGS, T.S. KRAFT, J. STIEGLITZ, M. GURVEN, H. KAPLAN.
- 17 **Statistical modeling of diurnal biomarker data: Guidelines, challenges, and future directions.** M.A. LIEBERT, S.S. URLACHER.
- 18 **Improving health care accessibility to research participants through point-of-care technologies.** F.C. MADIMENOS, G. EICK, J. SNODGRASS.
- 19 **After Theranos: Next-generation biomarkers and technologies.** G.N. EICK, J. SNODGRASS.

## **Saturday, Afternoon sessions.**

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Session Epigenetics: Bridging cultural and biological anthropology  
59:

***Invited Podium Symposium.*** Chair: Genevieve Housman.

Co-organizers: Chris Barrett, University of Kansas; Ainash Childebayeva, University of Michigan; Elizabeth Clausing, UC San Diego; Mary Rogers, U of I Urbana-Champaign; Karthik Yarlagadda, U of I Urbana-Champaign.

### **CC Ballroom A.**

Epigenetics involves modifications to DNA expression that are independent of the underlying nucleotide code. While some epigenetic modifications are responsive to environmental effects, others are stable across generations. Gaining a better understanding of these mechanisms and how epigenetic patterns affect phenotypes of humans and nonhuman primates is of increasing interest to biological anthropologists. Recent work has focused on the impact of stress on the epigenome, evolutionary epigenetic differences between species, and the interplay between genetics and behavior. Additionally, epigenetic theory has been applied to the social sciences, including the study of embodiment, local biologies, and local ecologies. While the dynamism between cultural and biological environments influences epigenetic variation, it has been difficult to make sense of the outcomes. Anthropology, as a multidisciplinary field, inherently lends itself to better understanding epigenetic variation throughout life history. However, while epigenetic theory has been applied interdisciplinarily, there is little communication between researchers representing the social and the biological aspect of this work. More researchers have started to make use of this interdisciplinary approach to great effect in their work. For example, epigenetic methods have been used to investigate racial health disparities, complex traits and diseases, the effects of childhood exposures on future health and disease outcomes, evolution, and adaptation. It is clear that epigenetics has started to bridge the space between nature and culture - two concepts that have traditionally operated in opposition. This session aims to move beyond these divisions and begin collaborative discussion between biological and social aspects of anthropological epigenetics.

- 2:30 **Evolution of the Epigenome in Ultraconserved Non-coding Elements in Animals over 300 Million Years.** C. FAULK.
- 2:45 **Recent regulatory changes shaped human vocal and facial anatomy.** G. HOUSMAN, D. GOKHMAN, L. CARMEL.
- 3:00 **Socioecological correlates of epigenetic variation in nonhuman primates.** J. TUNG, T.P. VILGALYS, N. SNYDER-MACKLER, J. SANZ, A.J. LEA, S.C. ALBERTS, L.B. BARREIRO, C.J. JOLLY, J. ROGERS, M.E. WILSON.
- 3:15 **The relationship between stress, gene methylation, and reproductive function.** M.P. ROGERS, K.M. LEE, A. GALBARCZYK, G. JASIENSKA, R.S. MALHI, K.B. CLANCY.
- 3:30 **Population diversity, diet and epigenetics.** M. MOSHER, C. GERHOLD.
- 3:45 **Epigenetic predictors of pubertal timing.** A.M. BINDER.



- 4:00 **Germline epigenetic inheritance: Challenges and opportunities for linking paternal experience with offspring biology and health.** C.P. RYAN, C.W. KUZAWA.
- 4:15 **High-Altitude Epigenetics.** A. CHILDEBAYEVA, D.C. DOLINOY, J.M. GOODRICH, M. RIVERA-CHIRA, F. LEON-VELARDE, M. KIYAMU, T.D. BRUTSAERT, A.W. BIGHAM.
- 4:30 **Epigenetics, gene expression, and stress in mothers and offspring in the Democratic Republic of Congo: A biocultural investigation of the intergenerational effects of stress.** C.J. MULLIGAN, F.M. MAISHA, C.J. CLUKAY, C. HSIAO, P. REJ, N. ESCOFFIER, E. QUINN, L. NEVELL, D.A. KERTES.
- 4:45 **Shifts in biology and mental health among Hispanic immigrant mothers and children in Nashville, TN before and after the 2016 presidential election.** E.S. CLAUSING, A.L. NON.
- 5:00 **From Cheap Chicken to Genome Instability: Arsenic, Diabetes, and the Social Nature of One-Carbon Metabolism.** H. LANDECKER.
- 5:15 **Living with a permeable body: corporeal plasticity and its politics from ancient medicine to epigenetics.** M. MELONI.
- 5:30 **Mutable Environments and Permeable Human Bodies.** M. LOCK.
- 5:45 **Discussants: Amy Non, Zaneta Thayer.**

Session Life History and Behavior Ecology  
60:

*Contributed Podium Presentations.* Chair: Sam Urlacher.

**CC Room 26 AB.**

- 8:00 **Comparing Sleep Segmentation Between Traditional and Western Populations: a Test of the Sentinel Hypothesis.** E.C. SHATTUCK, D.R. SAMSON.
- 8:15 **Activity, labor demands, and sex shape sleep patterns among Himba pastoralists.** S.P. PRALL, G. YETISH, B.A. SCELZA, J.M. SIEGEL.
- 8:30 **Seasonal changes in sleep duration may be adaptive among San hunter-gatherers.** G. YETISH, J. SIEGEL.
- 8:45 **Epigenetic Insights into Early Life Plasticity and Reproductive Function.** G.R. BENTLEY, R. STÖGER, R.D. EMES, B. BAR-SADE, K. BEGUM, O. EDEN, P. MELAMED.
- 9:00 **Facultative fatherhood? Parental and alloparental caretaking tradeoffs in Cebu, the Philippines.** S. ROSENBAUM, T.W. MCDADE, S. AGUSTIN, C.W. KUZAWA, L.T. GETTLER.
- 9:15 **Life histories, aging, and testosterone levels among Datoga, Hadza, and Qom men.** L.C. ALVARADO, C.R. VALEGGIA, P.T. ELLISON, C.L. LEWARCH, M.N. MULLER.
- 9:30 **New Estimates of Hunter-Gatherer Mortality Patterns From Improved Fits of the Siler Model.** J. JONES, M.D. GURVEN, M.H. PRICE.

9:45 **Hadza Hunter-Gatherers Exhibit Gender Differences in Space Use and Spatial Cognition Consistent with the Ecology of Male and Female Targeted Foods.** B.M. WOOD, J.A. HARRIS, L. VASHRO, M. SAYRE, D.A. RAICHLEN, H. PONTZER, A. SANCILIO, J. BERBESQUE, A.N. CRITTENDEN, A.Z. MABULLA, J.H. JONES, E. CASHDAN.

10:00 **BREAK.**

10:30 **The Life History of Hunting Skill: Cross-cultural and Individual Variation.** J. KOSTER, R. MCELREATH.

10:45 **Strategic risk portfolios in humans: Are preferences for new between-community social relationships a function of a chronic lack of resources and existing between-community relationships?** A.C. PISOR.

11:00 **Husband, Lover, Pater, Genitor: Concurrency and Paternity in Himba Pastoralists.** B. SCENZA, S. PRALL, N. SWINFORD, S. GOPALAN, E. ATKINSON, R. MCELREATH, J. SHEEHAMA, B. HENN.

11:15 **Socio-ecological predictors of maternal uncle investment in the bilateral, semi-nomadic Shodagor.** M.H. KEITH, K.E. STARKWEATHER.

11:30 **Temporal clustering of sexual contacts can maintain endemic sexually transmitted virus in mobile subsistence populations.** A. HAZEL, J. HOLLAND JONES.

11:45 **The perils and promise of the WEIRD: contextualizing results from WEIRD and non-WEIRD populations.** K.B. CLANCY.

Session Population History  
61:

*Contributed Podium Presentations.* Chair: Ellen Quillen.

**CC Room 26 AB.**

2:30 **Superarchaic admixture confirms a deep separation of Neanderthals and Denisovans.** A.R. ROGERS, A. ACHENBACH, K. GWIN, N. HARRIS.

2:45 **Spectrum of Neandertal introgression across modern-day humans indicates multiple episodes of human-Neandertal interbreeding.** F.A. VILLANEA, J.G. SCHRAIBER.

3:00 **An Archaeogenomic Investigation of Consanguinity During the Neolithic Transition.** R.O. TASKENT, A.P. SUMER, D. KOPTEKIN, M. OZKAN, F.C. CEBALLOS, O. GOKCUMEN, M. SOMEL.

3:15 **Estimation of archaic hominin haplotype frequencies in contemporary Aleuts.** J.M. MUSKRAT, T.N. MARRIAGE, K. BEATY, L. SYKORA, S. ALDEN, C. BARRETT, M. CRAWFORD, D. O'ROURKE, J. RAFF.

3:30 **Genomic ontologies provide evidence against environmental adaptation during the Beringian standstill.** S.D. NIEDEBALKI, J.C. LONG.

3:45 **Using whole mitochondrial genomes from 100 ancient Indigenous British Columbian individuals to infer the impacts of European colonization.** A.C. OWINGS, J.W. JOHNSON, J. LINDO, Y. CUI, S. GAO, H. LI, C.E. HUGHES, B. PETZELT, J. MITCHELL, C. MARSHALL, J.S. CYBULSKI, R.S. MALHI.

- 4:00 **Patterns of Genetic Coding Variation in a Native American Population before and after European Contact.** J. LINDO, M. ROGERS, L. MALLOTT, B. PETZELT, J. MITCHELL, D. ARCHER, J. CYBULSKI, R. MALHI, M. DEGIORGIO.
- 4:15 **Mitochondrial haplogroup variation from the archaeological site of Cundisa, Bolivia.** J. KENNEDY, T. HONAP, S. CHÁVEZ, S. CHÁVEZ, K. SANKARANARAYANAN.
- 4:30 **Polynesian ancestry in South America? A genomic insight from Mocha Island, Chile.** C. DE LA FUENTE, R. CAMPBELL, F. SANTANA, M. MORAGA, E. WILLERSLEV.
- 4:45 **Genetic History of Los Floridanos, Florida's First Spanish Families.** T.G. SCHURR, C.B. SOLANO, C. SUPER, R.E. FLESKES.
- 5:00 **An initial examination of biological affinities of northeastern Indian populations relative to other South Asians. A dental morphology investigation.** B.E. HEMPHILL, T. POJAR, B. LANGSTIEGH.
- 5:15 **A Method for Identifying Source Populations in Genetic Ancestry Studies.** A.J. KOEHL, J.C. LONG.

Session 62: A life of science: A symposium dedicated to C. Owen Lovejoy in recognition of his many scientific contributions

*Invited Poster Symposium.* Chair: Philip L. Reno.

Co-organizers: Michael Selby, PCOM; Scott Simpson, Case Western Reserve University School of Medicine; Robert Tague, Louisiana State University; Robert Walker, New York Chiropractic College.

## CC Room 22.

Professor C. Owen Lovejoy has had a long and distinguished scientific career that began in the late 1960s and continues unabated to this day. His numerous scholarly contributions span a diversity of interests, notably the application of biomechanics, developmental biology, and comparative functional anatomy to the understanding of hominin locomotion (especially *Australopithecus africanus*, *Au. afarensis*, and *Ardipithecus ramidus*), development and revision of skeletal aging techniques and their application in paleodemography, and modeling of hominin origins, among many other facets of biological anthropology. This body of research has had a determinative and lasting impact on our understanding of the course and nature of human biology and evolution and have been omnipresent at the AAPAs. These achievements have been recognized by his peers by election as a fellow to the American Association for the Advancement of Science and the American Academy of Arts and Sciences and to the National Academy of Sciences. While still a graduate student, Professor Lovejoy accepted an academic position at Kent State University (Kent, Ohio) where he continues as an active and engaged faculty member. His efforts were seminal in the formation of the Biological Anthropology Ph.D. program at Kent State University, which has gone on to become among the most productive in the field. During that span of time, he has taught and mentored many students who continue their scientific

careers based on the lessons learned while at Kent State University. To honor Professor Lovejoy, former and current students, collaborators and colleagues will gather and present research and engage in an open discussion that reflects the broad and deep scholarly foundation he built.

**Discussants: Nina Jablonski, Bruce Latimer, Owen Lovejoy, Richard S. Meindl.**

- 1 **Regulatory Constraint During Human Knee Evolution Underlies Osteoarthritis Risk.** T.D. CAPELLINI, D. RICHARD, E. JAGODA.
- 2 **Evolutionary origin of skeletal tissues: dissecting “homology” at the morphological, cellular, and molecular genetic levels.** M. COHN, L. SLOTA, D. LOPEZ, G. ZHANG, O. TARAZONA.
- 3 **Evolutionary and developmental perspectives on human toe reduction.** P.L. RENO.
- 4 **Deconstructing genetic influence: evolution of the primate craniodental complex.** R.J. SHERWOOD, A.M. HARDIN, R.P. KNIGGE, D.L. DUREN, J. SUBEDI, S. WILLIAMS-BLANGERO, M.C. MAHANEY.
- 5 **The Hominid Anterior Inferior Iliac Spine and Why it Reflects the Unique Anatomy of our Iliac Isthmus.** D. ZIRKLE, C. LOVEJOY.
- 6 **Homeotic transformation of the human vertebral column – more global than local.** R.G. TAGUE.
- 7 **Variation in Maturational Timing Influences Interpretations of the Juvenile Skeleton.** M.E. BOEYER, D.L. DUREN.
- 8 **A comparative analysis of carpometacarpal joints four and five in various hominoid and cercopithecoid species.** H. LAWRENTZ, C. LOVEJOY, R.S. MEINDL, M. RAGHANTI.
- 9 **Is the locomotor diversity in odd-nosed monkeys reflected in their olecranon size or orientation?** M.S. SELBY.
- 10 **Heat increases IGF-I uptake in growth plate and perichondrium of mouse hindlimbs: Implications for human evolution.** M.A. SERRAT, G. ION, D. THOMAS.
- 11 **Canine-root size variation and its influence on the pattern of sexual dimorphism in the facial skeleton of *Australopithecus afarensis*.** W.H. KIMBEL, Y. RAK, J. LAWRENCE.
- 12 **The Lower Limb of *Ardipithecus ramidus*.** S.W. SIMPSON, N.E. LEVIN, J. QUADE, M. ROGERS, S. SEMAW.
- 13 **Reconsidering human origins in light of striatal neurochemistry.** M. RAGHANTI, C. LOVEJOY.
- 14 **Comparative palaeodemography of medieval British archaeological populations, with reference the Libben Site, Ottawa County, Ohio.** J.C. OHMAN, C.A. DAVENPORT.
- 15 **“Anthropologically, socially and politically sound”: American eugenics, anthropology, and the Galton Society.** K.F. KERN.

- 16 **Goethe, Darwin, and Wolff: Does Wolff's "Law" Mean Anything?** R.A. WALKER.
- 17 **How to save anthropology: Lessons from primatology and human origins research.** K. SAYERS.